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THE

VETERINARIAN;

A

MONTHLY JOURNAL OF VETERINARY SCIENCE

FOR 1863.

VOL. XXXVI—VOL. IX, FOURTH SERIES.

EDITED BY

PROFESSORS MORTON AND SIMONDS.

Ars Veterinaria post medicinam secunda est.—*Vegetius.*

LONDON:

PRINTED BY J. E. ADLARD, BARTHOLOMEW CLOSE.

PUBLISHED BY LONGMAN, GREEN, LONGMAN, ROBERTS, AND GREEN.

PATERNOSTER ROW.

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THE

VETERINARIAN.

VOL. XXXVI. No. 421. JANUARY, 1863. Fourth Series. No. 97.

Communications and Cases.

OBSERVATIONS ON "SOUNDNESS."

By R. H. Dyer, M.R.C.V.S., Waterford.

From time to time members of the veterinary profession have written on this all-important subject, and it is to be regretted that up to the present time we are as much in the dark as we were half a century ago respecting it, as each examiner pursues his own course in the matter.

I am not aware that I can do better than commence the year 1863 with a few observations upon the manner in which horses are inspected, and the many interpretations placed upon the word "sound" by the legal and veterinary professions, as well as by the public in general. There are so many definitions given as to the meaning of the word *sound* by those persons who have to sell, by those who intend purchasing, and by those whose province it is to give an opinion upon such cases, that we are often perplexed to know what is best to be done when called upon to act for our clients. Webster defines the word "sound" to be "*entire, unbroken;* not shaky, split or defective; undecayed, whole, perfect, or not defective; whole, impact; unmutilated, healthy; not diseased, not being in a morbid state; having all the organs complete and in perfect action."

Many of our able lawyers have also defined the word "sound." In Oliphant, page 51, we read Chief-Justice Best, in the case of Best *v.* Osborne held that "sound" meant perfect. In Kiddell *v.* Brunard Mr. Baron Parke said, "The word 'sound' means what it expresses, namely, that the animal is *sound* and free from disease at the time he is warranted."

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And in the same case Mr. Baron Alderson said, "the word 'sound' means *sound;* and the only qualification of which it is susceptible arises from the purpose for which the warranty is given."

Again, "we may define a horse to be 'sound' when he is free from hereditary disease, is in the possession of his natural and constitutional health, and has as much bodily perfection as is consistent with his natural formation. The rule as to unsoundness is that if, at the time of sale, the horse has any disease which either actually does diminish the natural usefulness of the animal, so as to make him less capable of work of any description, or which, in its ordinary progress, will diminish the natural usefulness of the animal—or if the horse has, either from disease or accident, undergone any alteration of structure that either actually does at the time or in its ordinary effects will diminish the natural usefulness of the horse, such a horse is *unsound.*"

Mr. Baron Alderson said, "I am of the same opinion. The word 'sound' means *sound,*" &c. Now all this reads very well upon paper, but we often find there is much difference of opinion even with legal men when we hear their arguments in a court of law, and more so with regard to the evidences "as found in recorded cases of veterinary surgeons."

It has been suggested that an association should be formed of professional and non-professional men, in order to come to some settlement as to what constitutes *unsoundness* (*vide Veterinarian,* vol. xxx, p. 550.) I do not see the way clear in this step, although it *might* be one in the right direction, *provided always the subsequent steps were followed up in a proper manner.* There would, I think, be almost as much difficulty in arranging a code of laws relative to soundness in horses as there is in passing a bill through both houses of Parliament. In the first place, *who* will undertake to collect a jury or committee for such a purpose? The Royal College of Veterinary Surgeons I hold to be the proper medium for such to emanate from. A memorial could probably be got up and signed by the profession, and a deputation wait on the members of the profession, constituting the Royal College of Surgeons of England, and bring the question before them, requesting that they will take the matter into their consideration. Until this or some such step is taken the laws as to soundness in horses will remain a dead letter.

There is another question which is of as much importance as soundness. I allude to warranty. We often hear of horses being *warranted,* and warranted sound too. What is

the meaning of this?—not what is *presumed* to be the true definition of warranty as to soundness. I find from experience that those who have horses to sell say they are sound, and always have been sound so far as their knowledge goes. These people refer only to the fact of the animals being free from *lameness*. The majority of the men with whom I have to examine believe if a horse is free from lameness that he is necessarily *sound*, and I have no doubt this opinion is almost universal. I do not include the respectable class of horse-dealers, but the men who breed and rear horses for sale; at least I am justified in coming to this conclusion so far as the people in my district are concerned. It is a very common expression to hear "My horse is as sound as a trout"—or "as sound as a bell"—and when the horse is inspected professionally, and the certificate merely states that the animal just examined is usefully sound only, a murmur of disapprobation is manifested on the part of the seller.

There are so many definitions furnished as to what a sound horse is by non-professional men, that we need not wonder at people being puzzled in the course of their dealings with horse-men. We have first, sound horses—secondly, usefully sound—then, practically sound, constitutionally sound, naturally useful, and so on, most of which expressions are unsatisfactory to the generality of purchasers; and so long as there are a majority of unsound horses in the market, so must we in our examinations arrange our certificates so as to suit each individual case.

Some of the definitions of *soundness* having been given by me, it will be as well now to proceed to describe the proper method of *examining* a horse as to soundness. It may not be out of place if I mention that Ireland has been my residence for the last thirteen years and upwards; that in this country it is usual to employ veterinary surgeons for the purpose of examining horses as to their soundness previous to being paid for by the purchaser, which naturally gives the veterinarian a fair opportunity of becoming *au fait* at this kind of horse-practice, and in the course of a year a great number of animals pass his inspection. I have been sent for specially to Wexford, Kilkenny, Limerick, Cork, Carlow, Kildare, and Dublin, for the purpose of testing the soundness of horses which have been purchased by my clients. I have had occasion also to attend at many of the fairs for the same purpose, and thus I have had frequent opportunities of learning the various devices had recourse to for *blinking* or *hoodwinking* those concerned about the purchase of animals, as well as

having watched veterinary surgeons themselves putting horses through their respective trials. I merely mention these things *en passant*, for the purpose of showing that my practice is not *theoretical*, but entirely *practical*. As I proceed I shall take an opportunity of mentioning special cases I have been called upon to examine. We will now suppose a horse is brought to an establisment for the searching eye and hand of the veterinary surgeon. The horse is placed in a box or stall (by himself, if possible), there to remain for a certain time. This will in some measure depend upon the distance and pace the horse has travelled. If, on the one hand, he has been brought but a short distance and that distance slowly, the examination may be proceeded with at once, if convenient; if, on the contrary, the animal has been a considerable time on the road, it will be wise, in most cases, that he should remain for an hour or more in a quiescent state, the examiner taking an opportunity during this time to ascertain if he be either a wind-sucker or crib-biter, and also to notice especially his manner of standing—in short, all the time the horse is standing, as it were, waiting for the examiner, he is in reality under his observation, and the examination must be considered to be in progress. When the horse has stood sufficiently long he is taken to a window, stable door, or shed, that the eyes may be thoroughly inspected. Sufficient care is not taken by the generality of practitioners in the examination of the various structures met with in the eyes, their attention being merely directed to the question as to whether there is any opacity, such as cataract, or any small specks. Very few, I believe, seem to take notice of the form or convexity of the eye. As some remarks upon this subject will appear in their proper place, I will therefore proceed to notice the best positions for the examiner to view the internal structures of the organ. Take your position opposite the eye, so as to look directly through the pupillary opening. In this way may be seen the muscular movements of the iris, should there be proper and sufficient light. It is impossible to make an observation in a strong and bright light, although I have heard some people say they can. They may as well tell me they can see into one's drawing-room when the doors and window-shutters are closed. After having satisfied yourself with this view, take a step towards the shoulder and look *across* the cornea. This must be done on both sides, *i. e.* from the outer to the inner canthus, and from the inner to the outer canthus. By these means the examiner will be fully competent to see all that is required to be known with reference to the eye. Eversion of the lid, however, may be resorted to when considered necessary.

Should the light not be sufficient for your purpose, or should there be too much sun for your observations, you may take the horse into a dark stable, and carry on your investigation by means of a lighted candle. Care must be taken not to mistake the reflection of the candle for a cataract; indeed, much care and some judgment are required in the explorations in this latter way. I cannot conceive the ophthalmoscope at all practicable in the hands of veterinarians, as our patients do not generally remain quiet enough for the use of that instrument. Being satisfied with the eyes, we then proceed to the mouth, so as to ascertain the age; to see if the *incisors* are broken or worn; to view the tongue and molars, &c.; then to the face generally; ear, salivary glands, forehead, poll, down the neck, taking cognizance of the jugular vein—and it is usual at this stage to cough the horse—proceeding onward in course to the shoulder, grasping the skin about the point, not forgetting to look well at the muscles of the scapula; and on towards the knee. Searching from the knee downwards will require much discrimination: both eye and hand are necessary now. In the first place, we must notice if the front of the knee is free from blemish, that the integument moves freely over the point *when a blemish does exist;* look well for morbid growth of bone upon the large and small metacarpals; try the integument below the carpus, which will give proof as to the operation of neurotomy having been performed or not; trace the skin, bone, and tendons down over the fetlock-joint to the coronet; look well to the lateral cartilages; try if they are elastic and of proper shape; then turn yourself round and examine the posterior part of the limb from the elbow to the foot, so that every portion may be well scanned, in order to find marks of speedy cut, ruptured tendons, interference from shoeing, enlarged fetlock, &c., this joint being a very complicated one and liable to injury. Now raise the foot and examine the horny structures; bring the foot into contact with the olecranon of the ulna; if this can readily be done, there will not be any stiffness about the upper joints; but if any difficulty is found in placing the foot and elbow together, no doubt will exist that some organic change has taken place, either from injury *above* the knee, the knee itself, the fetlock-joint, or the foot. You cannot attach too much importance to this portion of the examination, and this having been accomplished, return to the withers. The hand is passed along the course of the spinal column, and the centre of the loins pressed, which will give an idea of the state of parts underneath; then onwards to the patella, looking under the abdomen in search

of hernia, for sometimes we meet with umbilical as well as scrotal hernia. We proceed then to the hock-joint, down to the foot, looking first for capped hock and curb, then in search for bursal and other enlargements about the inside and front of this joint. You will, of course, carry your researches on in the same manner on the right side of the horse; and having made your observations, you can now take a general survey of the animal, to ascertain his *colour*, particular *marks*, *height*, and mark well if the feet are all right, if he stands in good position, &c. All these things may be done almost at a glance. This finished, the horse may be put against a wall and struck at, if the examiner feels disposed. I do not pin much faith upon this sort of thing, since many a good horse has grunted and has been termed a "bull" when he was not, and many a good judge has met with a *stick* in this way, therefore it cannot be relied upon. The horse is now slowly trotted upon stones and otherwise, to see if his action is even, that is to say, if he is *free from lameness*, which, by the way, the examiner will have formed a good idea of during his researches. If this is satisfactory, a saddle is placed upon his back. If he happens to be untrained, then it is necessary to put a cavesson upon him, with a long rope attached, and either get a fast runner or two to run him a distance or ring him, which is the better plan, if there is room enough and the ground suitable. The horse is made to gallop sufficiently to test his wind; and should the examiner be at all doubtful as to his respiratory organs, it will be necessary to take more time in order to ascertain the true state of his thoracic viscera. Some horses are very excitable; the pulse does not become tranquil for some time after the gallop, nor does the respiration soon become quiet. I have been occupied for an hour or more previous to the giving an opinion in some such cases as these, and it is better and wiser to take time than to give a hasty opinion. Presuming all these trials are satisfactory, the horse is taken into the forge to have his feet examined. Some veterinary surgeons are of opinion the shoes of a horse under examination should not be removed. It is said the surgeon ought to tell whether there is disease existing or not by *looking* at a foot. I must confess my inability to do so, for the result of my experience tends to show that in many a foot I have found a corn when the external part of that foot has *appeared* perfectly sound and free from disease; besides, how is it possible to ascertain if seedy toe be present if the shoe remains on, and this more particularly in farmers' horses? I will admit that in many cases we can form a pretty correct idea as to the state of parts by

an external examination. Again, I have heard it said that some examiners never gallop their subjects; they judge by the sound of the cough. Now, some animals cannot be coughed.

I have no doubt every man who considers himself competent to examine horses has his own method of doing so, and perhaps his system is perfectly right; at the same time it may be asked for what purpose is the assistance of the veterinary surgeon required? The only reply I can offer is to the effect that he is expected to inform his client of any *defect* the animal has at the time of examination, and to give an opinion as to the *probable result* of that defect, and likewise to state whether it is likely to prove injurious to the animal in his work or take away from his usefulness. This I hold to be the chief duty of an examiner as to soundness.

When the examination is concluded it is usual to write a certificate. Many *forms* have been recommended. I have one which I employ. It is only necessary to mention that any form will answer the purpose, provided the examiner has it made in such a way that he has space to write his remarks. Mine is so arranged that in the *block* I take notes of all that may be thought by me at the time worthy of observation. It answers well as a reference. I remember having examined a horse for a farmer who bred him, and which was considered usefully sound only. In six months after, that horse was presented again by a purchaser, and a certificate was written which was nearly a copy of what had been written previously. The animal was sent to a friend in London, and in a short time it was discovered that the horse had hernia. The gentleman here who had purchased him told me, *in confidence,* that I had overlooked the hernia. I assured him that it was *his* mistake, not mine; that I had taken a note of it at both examinations, which I could show him if we walked into the office. I handed him my certificate book, and he read upon both blocks that hernia was present; this saved my credit, and he was satisfied.

I read in a newspaper a short time since that a person examined upwards of *three hundred horses* as to soundness at a fair in Ireland. Now, it happens that at the fair adverted to about three days are set apart for the sale of horses (although but one day is supposed to be the *horse-fair day*), so that the person had an herculean task to perform. Presuming the examiner took his morning meal at seven, and commenced his work at eight o'clock, and continued without intermission until six o'clock p.m., which would be ten hours, and allowing him five minutes for each examination, he would in that time

have passed or rejected *one hundred and twenty* horses, two days would be 240, and the third day the remainder of these are said to have passed the ordeal.

I don't stop to inquire *what kind of examinations as to soundness these could have been*, but only mention what I read in a paper a few weeks ago. Nor do I think I am called upon to make any comment upon it. It may be said of such "Verrimus ad summam fortunæ."

(*To be continued.*)

A DISEASED SPLEEN.

By A. Rushall, M.R.C.V.S., Bishop Stortford.

November 1*st*, 1862.

Dear Sir,—I have sent by rail a hamper containing a diseased spleen.

Of the history of the case I know nothing, except that it was taken from a mare seventeen years old, and that she had had several foals. She was destroyed yesterday. The case appears rather singular to me, and should it be in any way so to you, I will try and get all the information I can on the subject. The spleen is just as I received it from the slaughterers.

I am, yours truly.

Professor Varneli.

REMARKS ON THE ABOVE BY PROFESSOR VARNELL.

The diseased spleen referred to in the above communication is very interesting, not particularly on account of its size, for we have seen much larger, but from the peculiar character of the elements upon which its bulk depends. It was not weighed, but, judging from others, it could not have been less than twenty-five pounds in weight. Its surfaces and borders, the former especially, were irregularly nodulated, the nodules varying in size from that of a walnut to a large-sized hen's egg. Many of them were dark in colour, others much lighter, but there were a few that were mottled, being light in some places and dark coloured in others. Its consistence also varied; as a whole, it was much firmer than natural, and with regard to the *nodules*, this was particularly

the case, as they yielded comparatively little to the pressure of the fingers.

On sections being made through the spleen, the cut surfaces presented a similar varied aspect to that of its outer surface. No part of it, as far as could be detected, was normal. In some places it was quite black, in others nearly white; again, other parts varied in colour from an iron-gray to that of a brownish-gray. The two former, the black and white, greatly preponderated, and were so singularly intermixed as to give the parts the appearance of white and black marble. Further examination of these sections, even with the unaided eye, partly determined the character of this abnormal production.

The black parts imparted to the finger or a piece of white paper a stain as if made with Indian ink. On testing the white parts in the same way, the finger or paper became simply moistened, having no greasy feel, nor did the paper appear as if grease had been applied to it. The precise nature of the former material seems easy to determine; it consisted of that which is very common in the spleens of old gray horses, namely, a deposit of pigment. But with reference to the latter, not being able to speak so confidently, a small portion of each was placed under the microscope, which revealed elements identical in character with those taken from a melanoid cancer, as figured in 'Paget's Pathological Anatomy,' p. 483, vol. ii, to which excellent work the reader is referred for an article on this disease. The matter scraped from the white part of the cut surface had a peculiar creamy appearance, or it more nearly resembled that which might be scraped from the cut surface of the brain. The dark and white parts being treated in the same way, yielded a dark, dirty, creamy mass. This material, when placed under the microscope, showed numerous pigment-granules, some free and others located in cells. Some of the corpuscles were large, and contained *nuclei*, around which the minute granules had clustered. Other cells, also of large size, but not so regular in form, contained nuclei and very firm granular matter in their interior. Besides these there were a few nucleated, oblong-shaped cells, which varied much in size.

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from vol.* xxxv, *p.* 716.)

Plants which prove poisonous, or otherwise injurious, to our Domestic Animals.

When commencing my remarks on botany as applied to veterinary science, I proposed to consider the subject under three heads, viz., "plants used as food, as medicines, and plants which prove poisonous to our domestic animals." The former division has already been brought under notice, and according to my original intention the medicinal plants should next receive attention; but from the many inquiries I have had upon the subject from different members of the profession, I am inclined to believe that it will prove of greater interest to proceed at once with the third division of my subject, viz., the botanical characters, &c., of plants which prove poisonous, or otherwise injurious, to our domestic animals.

No department of veterinary science is involved in greater obscurity than this, a fact at which we need not feel surprised when we consider that the fundamental starting-point, viz., a knowledge of the science of botany, by which alone any information respecting the poisonous plants can be obtained, is entirely omitted in the education of the veterinary surgeon.

If there is one subject more than another which possesses features of interest and importance to the members of our profession it is a knowledge of those plants which, although scattered around us for some great purpose in the "economy of nature," and against the dangerous properties of which an all-wise Providence has endowed animals with a peculiar instinct to avoid, nevertheless do not unfrequently produce injurious and fatal results amongst them. Under such circumstances, when the attention and skill of the veterinary surgeon is sought for, from what source is he to obtain that information which is so much needed, not only to apply the successful remedies, but also to point out the causes in operation, as a future preventive against these injurious results? Can he refer to what he was taught as a student, or has he some work upon the subject in connection with veterinary science from which he can obtain the information so much required? In both he is at fault, for at the present day our profession cannot boast of either the one or the

other. Let us hope this state of things will not long continue, but that soon we may have the science of botany in combination with materia medica forming a distinct branch in the education of the veterinary surgeon. No one will be bold enough to say it is not needed.

Before commencing my remarks on the poisonous plants, I would offer one or two suggestions which it would be well to bear in mind in all cases of suspected poisoning. When called upon under these circumstances, our first observations should be as to the season of the year, the age of the animals, the number present, how many are affected, how long they have been placed in the same pasture, and whether they have been noticed to be recently feeding in any particular part of it. Search should then be made, the hedgerows and watercourses being especially examined, to ascertain if any plants have been recently bitten off. After death the contents of the stomach should be carefully examined, and in doing this a good pocket lens will be found of great service, and will often indicate, from the presence of portions of the leaves or flowers, the nature of the poisonous agent.

Should any unpublished cases of the fatal effects, or otherwise, of plants upon animals have fallen under the notice of any of the members of our profession, I shall feel great pleasure in receiving the particulars thereof, such being of interest in connection with this division of my subject. The first plant which I shall proceed to describe is the *Solanum dulcamara* (*woody nightshade*, or bitter-sweet), the fatal effects of which upon two animals came under my observation a few months ago.

(*To be continued.*)

HYDROPHOBIA IN THE HORSE.

By J. Bretherton, M.R.C.V.S., Calcutta.

Believing the above disease to be of rare occurrence in India, the following account of a case thereof may not be deemed uninteresting to many of your readers, although the features presented may not differ from others, as, no doubt, a similarity of symptoms exists in most cases of this description.

July 24th.—I was requested to attend a gray horse, the property of a merchant of this city, and was informed that he had been bitten by a dog an hour or so previous, while standing in the street, the dog having every appearance of

suffering from rabies. He wounded the horse on the nostril, making a longitudinal incision through the skin, which bled freely, and for a considerable time after. To the wound I applied Argent. Nitras, and the following morning administered to the horse a brisk dose of purgative medicine, which in due time acted freely. In the course of four or five days after, the wound had assumed a healthy appearance, and on constitutional symptoms occurring to prevent the animal's resuming work, I discharged him.

He was again admitted on August 26th, evincing much anxiety of countenance, saliva flowing from the mouth, grinding of the teeth, and pupils of the eyes dilated. I immediately administered purgative medicine, and ordered him to be kept undisturbed. The following morning the medicine was operating freely, but he had been very restless the previous night, and was constantly neighing, the noise resembling much the bark of a dog. Administered a large dose of Pulv. Opii.

27th.—A great unwillingness to take water was manifested.

28th.—He would not allow any one to approach him. He bit the manger and anything that was in contact with him. The saliva still flowed freely, and he was constantly neighing. As he had bit the syce on the hand, it was deemed dangerous to keep him alive, therefore he was shot in the stall.

ON STRANGULATED HERNIA.

By the Same.

We lose annually a large per-centage of horses in this country from strangulated hernia. I have noticed in some of your numbers communications on the subject, alluding to the successful treatment of the same by practitioners in India. I, however, have my doubts whether many of the cases quoted have been those of strangulation of the intestine, for had such been the fact gangrene would occur in a very few hours. Moreover, it is a questionable point if there are practitioners, here or elsewhere, who can diagnose hernia by the first symptoms, they being primarily analogous to an ordinary case of colic, although very marked in the latter stages. Manipulation, &c., reads well theoretically, but is often at fault practically. My own experience during nearly four years in Calcutta, and having operated in numerous

cases, is that very few recover, I having found the intestine invariably in a state of gangrene.

He would, indeed, be a bold practitioner who would operate on a valuable entire horse, admitted for a supposed case of colic, and proceed at once to cut into the hernial sac, or rather that which exists merely in imagination, and when, to his dismay, he will often find no hernia existing; thereby depriving the horse of his genital organs, thus rendering him useless as a sire, as well as risking his loss by tetanus.

This subject is one that presents a wide field for inquiry.

ON THE TREATMENT OF COLIC.

By "Argus."

In the *Edinburgh Veterinary Review* for September there is a long article by Mr. Joseph Gamgee, criticising the measures usually adopted in the treatment of colic in the horse, and explaining those which he has recourse to in such cases.

With all due deference for the long experience of Mr. Gamgee, I must confess that I differ with him. Cases of colic are very common here in India, and I necessarily treat a large number of them. During the rainy season I have had as many as twenty-five admitted into hospital in a week. I have, therefore, some right to offer an opinion on the subject.

Mr. Gamgee says he treats all cases of colic according to one system—at least, this is what I infer from the whole tenour of his article—and that treatment consists in the administration of a simple aperient and the use of glysters. He condemns the employment of tincture of opium, ether, &c., and the external use of stimulants. Now, surely this method cannot be applicable to every case of colic! It may doubtless answer in some, perhaps many; but I should be very sorry to rely solely upon it in all. I frequently administer aloes, but cases often present themselves in which it would be injudicious to use this drug, if not absolutely dangerous. In very simple cases a ball of camphor and ginger is all that is required to set the animal right. Why, then, should we give from five to eight drachms of aloes? In the majority of cases I give a drench of—

Castor or Linseed Oil, ℥vij;
Tinct. Opii, ℥iss;
Æther. Sulph., ℥ij;

and have every reason to speak highly of the effect. This is repeated in two hours, if ineffectual. Where there is evidently a constipated state of the bowels, I order Aloes ʒiv or ʒv, in a ball or solution, in addition to the drench. When a case is verging on enteritis, I would not dream of giving aloes, nor would I give ether. Enemas of warm water I use in every case, but of the temperature of about 100°, for in passing through the syringe, and from exposure to the air, a few degrees of heat are lost before entering the rectum. Mr. Gamgee advocates a temperature of 80°. Is it not inadvisable in spasmodic colic to introduce water at a lower heat than that of the blood? "Back-raking" is in appearance barbarous, and I seldom have recourse to it; but still there are cases where it does good, and we should then sacrifice appearances to utility. If the rectum be full of hard, dry pellets of excrementitious matter, enemas cannot be productive of such good results as we desire, and particularly if the enema be given with a "funnel tube," and the water allowed to gravitate by its own natural tendency. The emptying of the rectum must afford relief to the horse, if done gently and without brute force.

Mr. Gamgee complains of the glyster syringes in general use being ill adapted for the purpose. The syringe which I use, namely, Read's, is an admirable one, if properly managed; at least, I think so, and it is but fair to the inventor to say this much in its favour.

With reference to the use of external agents, I can speak very strongly in their favour. I can call to mind numerous cases of colic, of a severe type, in which the relief afforded by the application of a strong mustard poultice was most marked and unquestionable. Instead, however, of having the mustard simply rubbed over the abdomen, I have a paste made of it with vinegar, spread upon a piece of thick brown paper, about two feet square; this is placed upon the belly, and kept in close contact with it for forty or forty-five minutes by means of a horse-cloth and long flannel bandage, the latter going round the horse's body many times, and binding the plaster tightly to the skin at each fold. The beneficial effect of this I have over and over again proved.

On the subject of bleeding I am quite of Mr. Gamgee's opinion. As a general rule, bloodletting in colic is not only uncalled for, but absolutely injurious. Now and then cases present themselves in which I abstract a *moderate* quantity of blood, but they are few and far between, not more than one in about two hundred; in fact, when venesection becomes necessary, I look upon the case as having passed beyond the

stage of colic. I think it somewhat amusing nowadays to read some of the older, and, indeed, some of the more recent, veterinary works, in which one is told to abstract eight or ten quarts of blood for nearly every disease under the sun, and to follow this up with another three or four quarts if amendment (?) should not take place. It by no means follows, however, that because our forefathers carried this system to an extreme, that depletion is not occasionally called for.

There is no objection, I think, to having a patient walked about, or even trotted, in many cases of colic. Sometimes a *well-marked* case of *flatulent* colic is seen, and exercise after an enema does good, if it be not violent.

I may state that, in looking over my books for the past year, I find that the deaths from *all* diseases are at the rate of 2 per cent. per annum. I cannot, therefore, have lost many cases of colic, or, rather, cases commencing with symptoms of colic. What I have stated is the result of practical experience, and not based upon theoretical bias. My only object is to show that other methods of treatment have been generally successful, though, perhaps, not quite so much so as Mr. Gamgee's, for he says he has not lost a single horse by colic or other acute intestinal disease in thirty-two years where his treatment and directions have been followed. There are few men who can say their practice has excelled that, but still they may have been generally successful in their treatment. I hope to see the opinions of other practitioners recorded in the *Veterinarian* on this subject. I confess I shall be very glad to pick up a "wrinkle" or two, for so many cases present themselves out here that one often meets with something out of the common run of "gripes," and a discussion on the subject may elicit something worth knowing.

In conclusion, I may inform you, as a piece of news, that Youatt's book on the horse has been entirely superseded in India by the *Illustrated Horse Doctor*. The latter is in the hands of every amateur veterinary surgeon in the country. You see it on the table of every young subaltern who aspires to a knowledge of horseflesh, the book being referred to by all who cannot command the services of a veterinary surgeon. And what a book!

A QUANTITY OF NEEDLES AND FISH-HOOKS FOUND IN THE INTESTINES AND VARIOUS PARTS OF THE BODY OF A MARE.

By T. P. Boulton, M.R.C.V.S., Bromsgrove.

The history of the morbid parts sent is as follows:

On the 8th of September last I was requested to see a gray draught-mare, eight years old, in good condition, the property of Mr. Parson Shirley, of Webheath, near Redditch. On my arrival, I found the animal suffering from abdominal pains, and exhibiting symptoms of a very acute character. I proceeded to examine the patient, and detected two sharp-pointed needles protruding from her side, between the last two false ribs; these I, of course, extracted. I then back-raked her, and found much fæcal matter in the rectum, hard, coated with mucus, and streaked with blood. On emptying the bladder the urine was rather high coloured. I gave a glyster of soap and water, with solution of aloes, and ordered the repetition of it every three hours. I then placed the animal in a loose box, administered an antispasmodic draught, had the legs bandaged, and ordered fomentations to be applied to the abdomen. Finding but little relief, I exhibited six drachms of Barbadoes aloes with half a drachm of calomel; and the pulse being from 65 to 70, I abstracted four quarts of blood from the jugular vein.

On the morning of the 9th I again visited my patient, when I found that the spasmodic pains had abated, the pulse and conjunctival membranes were more natural, but the mouth was still hot and feverish. I ordered warm water to be given, with hay tea, scalded hay, bran mashes, linseed, and a few oats; each in turn to be tried, my object being to encourage the animal to eat. As the bowels were relaxed, I only gave a fever ball.

On the 10th I saw her again. The visible mucous membranes were injected and very yellow, the mouth hot and filled with saliva, pulse 54, extremities cold, back arched, coat erect, with a troublesome cough; respiration short and quick. I applied a mustard and vinegar poultice over the throat and chest, and ordered the head to be well steamed, also to continue the enemata, as the bowels were now again torpid. Subsequently I injected a glyster composed of two ounces of Cape aloes, dissolved in six quarts of gruel, with a view to empty the rectum, as the fæces were quite hard and

of a dark colour. I gave half a pint of castor oil, with two ounces of tincture of opium.

On the 11th I found all the symptoms more favorable, and the bowels responding. I gave a mild stimulant, ordered succulent diet, and the animal to be drenched occasionally with gruel. The linseed and the hay tea were also to be allowed, as the appetite was still failing.

On the 12th she showed slight spasms, but had taken a little more food. I gave some tincture of opium with spirit of nitric ether.

On the 13th I found her rather better. Gave a tonic, and ordered a little germinated barley and a few chopped carrots, so as to provoke her appetite. This failing, I tried some dry bran and oats, of which she ate a little, and also a small quantity of dry hay.

On the 16th, p.m., I had her walked out, but she moved very stiffly, arched her back, the coat was erect, countenance dejected, the eyes rather sunken; occasionally she turned her head to her side and made a pitiful groan; concussion on the side was almost sufficient to cause her to fall. I inserted a seton in front of the chest, and applied a counter-irritant.

On the 18th she ate a little food, but she had become emaciated, her countenance haggard; and she groaned, and seemed ready to fall when moved. I expressed to the proprietor my suspicion that there were more needles inside the animal, and that these were the cause of the mischief, and that all medical treatment would prove of little avail; I therefore recommended him to nurse her and give succulent and nutritious food, and see what nature would do, and I promised to call and see her occasionally.

From the 18th of September the mare kept gradually losing flesh till the 21st of October, when I advised the owner to have her destroyed, as I felt convinced there was no hope of recovery. He at once consented, and on my making a *post-mortem* examination I found a great quantity of fish-hooks and needles, which I have forwarded to you. The fish-hooks were principally in the large double colon, and the greater bulk of the needles in the duodenum. Abscesses and adhesions existed over nearly all the inner surface of the body.

OBSERVATIONS ON THIS STRANGE CASE BY PROFESSOR VARNELL.

I am sure that no one will read the above communication

without expressing feelings of horror mingled with pity for the poor dumb animal, the subject of these remarks.

If the cause of the pain the mare must have suffered had arisen from an accidental circumstance, our pity would be great; but if it should have been produced intentionally by some evil-disposed fiend, who maliciously sought to be revenged on a fellow-being by torturing one of his innocent and unoffending animals, and that by the most cruel mode that can be conceived, then our compassion becomes twofold—first, on account of the pain the animal had to endure; and secondly, because she was so unfortunate as to be subjected to one of the most barbarous tortures that man could possibly invent.

The parts brought to the College by Mr. Boulton fully verified the statements made in the above communication. A portion of one of the kidneys had two of the needles imbedded in its structure. Others were found in portions of the lungs, liver, pancreas, diaphragm, and many were shown us by Mr. Boulton which he had previously taken out of these and other organs. But on examining the first division of the small intestines it was wonderful to witness the large quantity of needles that existed, both in the structures of its coats and also in its interior. The former were pierced in all directions, and the latter was so studded with them that it was impossible to pass the finger along its course without meeting with them. We were told by Mr. Boulton that they had even found their way into nearly every organ of the body except the heart, in which he did not detect any. Some had even penetrated the skin; one was detected by the owner by its tearing his hand at the time he was cleaning the mare. What excruciating pain this poor creature must have suffered! Small abscesses were found in several places in the parts brought for our inspection, and we were informed that they existed in every organ in which the needles were lodged—a further proof of the pain the mare must have endured, and which continued until the humane advice of the veterinary surgeon who attended her to have her destroyed, was carried out.

It appears that a large quantity of *fish-hooks*, of different sizes, were found in the large intestines. These hooks, as far as we can make out, did not penetrate the walls of the bowels, therefore they might not have been the cause of much pain; nevertheless, in the mind of the individual who gave them they were doubtless more calculated, through the torture they were expected to produce, to effect his diabolical purpose than any other agent he could devise.

Mr. Boulton was desirous that the morbid parts should be laid before the members of the Veterinary Medical Association. This was done, and the novelty of the case, together with the barbarity connected with it, awakened a spirited discussion among the members present, many of whom were able to give the meeting much information respecting the manufacture of *needles* and *fish-hooks*, and the way the latter are usually packed before leaving the factory where they are made. This information tended greatly to confirm the idea which prevailed, that the imperfectly made needles and the finished fish-hooks were maliciously given to the mare by some evil-disposed person.

If it had not occurred that one of these needles had penetrated the skin, and was discovered by the owner in the way it was, the animal might have been allowed to live until death from exhaustion put an end to her sufferings. To be sure, the symptoms were diagnostic of such pain as the agents we have alluded to would produce; but neither Mr. Boulton nor any other veterinary surgeon would or could have supposed that they depended upon such a cause. It was therefore fortunate for the poor mare that the needle protruded through the skin, as it enabled Mr. Boulton to diagnose his case, which having done, he judiciously advised that she be destroyed. The poor animal, being bereft of speech, could not give utterance to her agonies or state the cause of them, even if she had known them, nor were the symptoms easy to be interpreted by her attendants.

It would be highly gratifying if we could divest the mind of the almost certainty of the above agents having been given by some one. We know that domestic animals are prone under some circumstances to pick up and swallow all sorts of things, such as pieces of wire, tin, iron, rags, stones, wood, &c. Cows especially will do this. Many instances have been met with of pins and pieces of wire in the heart and pericardium, which were believed to have worked their way from the stomach—the second, most likely—into those organs. Even the human being is not exempt from these abnormal propensities, needles and pins having been swallowed in large quantities, of which many well-authenticated cases are on record. Dr. Elliotson, in his work on the 'Practice of Medicine,' p. 1069, says—"I saw a man who had swallowed nineteen clasped knives. He was not believed for some time, but he assured me that he had swallowed them, and to convince me he took out of his pocket one of the same size as those he had swallowed, and put it down his throat. At last he died in the most horrid torments, the knives

cutting his intestines to pieces. The knives taken from his body after death were preserved in Guy's Hospital."

If the needles and fish-hooks were intentionally given to this poor mare by some person, as we fear they were, we may rest assured that his conscience does now, and will ever continue to be, severely PRICKED, and that his sufferings will far exceed those of his dumb victim.

It is pleasing to find that the inhabitants of Webheath, the parish in which the owner of the mare resides, have taken the matter up in the way they have, as will be seen by this extract.

DIABOLICAL CRUELTY.—Our readers will recollect that, some five weeks past, we recounted a singular injury to a horse belonging to P. Shirley, of Webheath—a pointed wire protruding out of its side, and which we then thought it might have swallowed by accident. The horse, having since that time gradually sunk in health, was destroyed ou Wednesday last, as utterly incurable, by Mr. Boulton, veterinary surgeon, of Tutnell; and a *post-mortem* examination made by him has brought to light a most extraordinary state of things in the poor animal's internal parts. Mr. B. fully expected to find some more needles, but not what he did discover—*handfuls of needles and fish-hooks*. The needles had wandered and pierced all the viscera, and every vital organ except the heart; in the liver, the lungs, and right through the kidney; while in the duodenum a great number had fixed crossway. The fish-hooks had not travelled far out of the alimentary passages; of these we saw eighty-three counted, but that was not nearly all; they were generally small river hooks, but a few were sea hooks, say about $1\frac{1}{4}$ inch long by $\frac{3}{4}$ inch across the bend. There were also some few nails, crooked tin-tacks, and machine-made building nails. Mr. Boulton has parts of the animal which he intends to lay before the College of Veterinary Surgeons in London. He has never met with a case at all similar before, except it be that in a cow belonging to Mrs. Greaves, of Scarfield's Wharf, he some time since detected a needle, which occasioned an abscess in the heart, causing death. Now, if, as the universal impression is, some miscreants maliciously administered these needles and hooks to the poor creature, what punishment do they not deserve? We sincerely hope the police will trace home the crime.

The owner, Shirley, gave, we learn, £18 10*s*. for this horse, and cheap it was considered at that sum. His neighbours, who respect him as an industrious and honest man, are raising a subscription to assist the poor fellow in buying another. We have been asked to receive any small donations the charitable may feel inclined to bestow; we shall be happy to do so, and to hand them over along with our mite.

MESENTERIC TUMOUR TAKEN FROM THE ABDOMEN OF A HORSE.

By F. FLETCHER, M.R.C.V.S., Lincoln.

DEAR SIR,—Yesterday I sent per Great Northern Railway a hamper containing a tumour taken from the abdomen

of a cart-horse which died on the previous night. I cannot say whether it will be of any interest to you, but to me it appeared to be of an unusual character for a mesenteric tumour.

I made a small opening in one part of it, and thought it contained coagulated blood. I did not make any further examination, as I perhaps might interfere with your examination of it. I therefore shall feel obliged if you will let me know the result of your examination.

The subject of the case was an aged cart-horse, the property of a higgler, who sent for me to see the animal last Wednesday, at 5 a.m. As the man stated the horse had colic, I sent one of my ordinary draughts, and saw him at 7 p.m., when he was a little easier. As there was considerable constipation present, I gave a cathartic in the form of Sulph. Mag. cum Calomel.

8 p.m.—No action of the bowels had taken place; the animal is very restless, but in no acute pain; pulse feeble and quick. Repeated the purgative as in the morning, and ordered enemas to be thrown up three times during the night.

6th, 8 a.m.—Animal about the same as last night, nor have the bowels yet acted. Gave Ol. Lini et Spt. Æther. Nit.

8 p.m.—He remains in the same state as in the morning; very restless, pain not acute, pulse more feeble. Again gave medicine as before.

7th, 7 a.m.—A few watery evacuations have passed; the pulse is scarcely perceptible; less pain present, but animal much weaker. Gave a diffusible stimulant.

8 p.m.—Animal down and hardly able to rise; alvine evacuations still watery and small in quantity, nor has any solid matter been voided since the commencement. I saw no hope of recovery, and therefore did not give any medicine. He died in the night.

I must add that when I first saw the animal I noticed a peculiar anxious appearance, such as we do not find in ordinary cases of indigestion, as well as a frequent throwing up of the head, which made me tell my employer that there was something peculiar in the case, and that I had but slight hopes of his getting better. The animal had not fed well during the two days previous to my seeing him, but, generally speaking, he was very healthy.

Post-mortem, 8th, 10 a.m.—External muscles very pale and flabby; scarcely any blood seen when the skin was taken off; upon opening the abdomen the bowels seemed to be in one mass, and *slightly* inflamed. I removed the whole

of the abdominal viscera from the cavity, and found the tumour in question, with the pyloric end of the stomach, portions of the colon, and small intestines, attached to it by an inch or so of mesentery, as you will see. The colon contained a large quantity of coagulated blood and hardened fæces; the mucous membrane throughout was of a dark-slate colour; the small intestines and rectum were empty, and slightly injected. All the other viscera were healthy, excepting the flabby state they were in.

Since I sent the tumour it has occurred to me that there may be an opening from the tumour into the colon, and if my diagnosis of the contents of the tumour be correct, the blood escaped by this opening into the colon.

I remain, dear Sir,

Yours very truly.

To Professor VARNELL.

REMARKS ON THE ABOVE CASE BY PROFESSOR VARNELL.

Mesenteric tumours, varying in size from a man's fist to that of his head, are by no means uncommon. Nor is the tumour forwarded by Mr. Fletcher remarkable as far as size is concerned, but with regard to its character I consider it of rare occurrence. In size it measures about fifteen inches by ten, and is ovoid in form. From its attachments and connections it must have been situated near the root of the anterior mesenteric artery; its upper part a little on the right side of the posterior aorta, and behind the former vessel. Its attachments are described by Mr. Fletcher. That part, however, which adhered to the large colon deserves especial notice, and shall be alluded to presently.

On examining the tumour more in detail I first dissected from its surface those organs and tissues that were attached to it. The duodenum and stomach were only loosely connected to the mass, but a part of the colon was very firmly adherent to its outer covering; indeed, it seemed to form a part of it. Around that part of the tumour which connected it to the spine a number of mesenteric glands existed, but apparently much atrophied. They were in no way concerned in the formation of the tumour, either primarily or secondarily.

Having thus examined the outer surface of this abnormal development, I next made a section through its entire centre, which at once disclosed what Mr. Fletcher suspected the interior to contain, viz., a coagulum of blood nearly as

large as the tumour itself. Its coat was not very thick, the thinnest part of it being where it was attached to the colon. The coagulum had been a long time in forming, as indicated by its colour and also its consistence. About one third of its bulk was of a light-straw colour, quite firm, and irregularly stratified. The middle third was less firm, and dark in colour, the red cells of the blood not having left its other solid constituents. The remaining portion was partly in a fluid state, the blood not having altogether coagulated.

On examining that part of the sac which was occupied by the partially fluid blood two openings were found, one of which could be traced directly into a large mesenteric vein and the other into the colon, the latter being produced by the coats of the tumour and also that of the intestine, having been so much thinned by absorption that it gave way, thereby allowing the contents of the tumour to flow freely into the colon.

With reference to the origin of this large formation, I am inclined to look upon it as commencing from a varicosity of one of the veins of the mesentery, a little before it joins the vena portæ. In this dilated vein the blood became partially arrested in its course, and a coagulum was formed, which, by being continually bathed with blood, slowly increased in size, and with it the sac, until it reached its present dimensions. The outer walls of this tumour must also have gradually increased in thickness, which I think may have been due to a slow deposition of lymph between it and its peritoneal covering. The tumour being developed between the two layers of peritoneum forming the mesentery, they would, of course, be separated from each other, and the enlargement thereby gradually drawn more to the intestines before alluded to. The close contact with the colon favoured the adhesion we have before described.

The interior of the sac was evidently supplied with blood by the mesenteric vein, which opened into it, and so long as its wall remained entire no particular inconvenience was experienced by the animal, except, perhaps, from the pressure it imparted to other organs; but the sac having at last yielded to the pressure within (at that part which we before noticed), the fluid blood it contained, and also that which continued to flow into it from the vein, found its way at once into the large intestine. The result is very easily imagined, and the symptoms described by Mr. Fletcher can as readily be accounted for.

It is interesting to notice the difference in the results of an adhesion of an intestine to a tumour of this character as

compared with those of an abscess; for instance, the latter, which may have formed in the liver or mesenteric glands, or some other organ, may, when fully developed, like the former, become attached to some part of the intestinal tube. Here, when absorption takes place, the abscess will discharge itself into the bowel instead of into the peritoneal cavity, which would most likely be fatal. This process must be considered as conservative of life, and it is one that is usually alluded to when speaking of one of nature's modes of preventing serious results from the formation and bursting of internal abscesses. But with regard to the tumour containing blood, supplied from a large vessel, and its adhering to some part of the intestine (the same in that respect as the outer wall of an abscess), and finally opening into it, the effect on the animal economy would be just the opposite to a conservative process, for almost sudden death must inevitably ensue.

This tumour was laid before the members of the Veterinary Medical Association, and the spirited discussion it brought forth indicated a strong desire to investigate morbid parts, with a view to obtain a correct knowledge of the pathology of the affection under which the animals whence they may have been taken was labouring. To carry out this object more fully much may be done by the members of the profession in different parts of England, by their forwarding the morbid parts of such cases of interest as may either die, or be slaughtered, with the history of the most prominent features of each case.

CASE OF PARTURITION IN A VALUABLE BROOD MARE.

By P. G. Verney, M.R.C.V.S., Stow-on-the Wold.

On Saturday last my attention was called to a valuable thoroughbred brood mare (Lady Bastard) the property of Sir Charles Rushout, Bart., of Sergoricote House. Upon making inquiries from the groom I ascertained that it was a case of premature labour, or what is commonly called *slipping her foal,* being two months before its time. Upon my arrival I found the water-bladder presented, and the mare was very much exhausted, having tried her utmost to get rid of the contents of her uterus. I examined her, and found an

extraordinary presentation, viz., the near fore leg passed into the vagina, the off fore leg pointing towards the back, the knee being just inside the uterus. By further examination I found the head with its cranial part downwards, and the lower jaw upwards; in fact, the fœtus was completely on his back. It therefore was an utter impossibility for the mare to relieve herself without the aid of veterinary science. I was consequently obliged to operate immediately, or else the animal must have soon died, and if the *modus operandi* is of any service to your valuable pages I offer it in the following plain manner.

First, I secured the near fore leg with a slip knot below the fetlock, and advanced the limb. Secondly, I made fast the off fore leg just at the same place, and by passing the knee-joint forward with one hand I pulled the rope with the other, and thus both fore legs adjusted. Thirdly, my greatest trouble had to come, which was to secure the head. I felt for the mouth, and then passed a slip into it and secured the *lower jaw*, making fast the head, which is no simple task, especially in a nervous thoroughbred mare. Holding fast by my slip on the jaw, and passing my other hand into the uterus and under the cranial part of the head, and also lifting it, and at the same time gently pulling by the slip, I managed to get the head into the vagina, and then the fœtus was sideways; but by pulling the top fore leg and shifting the head a little, I succeeded, having plenty of room, in placing the fœtus in the proper form for delivery, and by the aid of three men I delivered the mare; her noble owner being present the whole of the time, regretting the loss of a beautiful colt foal by the "Prime Minister." As soon as that was over I gave her the following:

℞ Spt. Ether. Nit. et Tinct. Opii, āā ʒij.

I find this the very best agent that can be given in all these cases, and I have had great experience in parturition. I also know that nearly all mares that are operated upon by veterinary surgeons, as a general rule, suffer from rigors of a serious character. I ordered the diet to consist of bran and steeped oats, with chilled water, and a little hay of the very best character.

I called in the afternoon, and found my patient rather uneasy from the afterbirth; therefore I removed it, and left her comfortably partaking of her mash, water and hay.

Sunday, November 16th.—I visited my patient; found her very stiff and rather unwilling to move; but still feeding; her

pulse, however, was rather quicker, being 45; the respiration also a little quickened; legs and ears cold. I therefore clothed the body, bandaged the legs, and put a cap on the head and ears, and administered the following:

℞ Ether, ʒj;
Tinct. Opii, ʒj;
Sulph. Magnesiæ, ʒviij.

As the bowels had not acted, I gave Sulph. Magnesiæ ʒviij again at night, and also again the following morning, in her water.

17th. Pulse still quick, respiration a little quickened, being 12 or 14 in the minute; bowels gently operated upon. A considerable discharge takes place from the uterus, and she is still feeding well.

Gave stimulants in her mash.

18th.—I found my patient not so well; pulse 60, breathing very quick, and nostrils distended. Abstracted four quarts of blood, and gave Opii pulv. ʒj in a soft ball, to be repeated every six or eight hours.

19th.—I found my patient progressing favorably; pulse 50; breathing very much slower; appetite good. Still continued the opium.

20th.—Improving fast; gave opium only once a day; pulse 40.

21st.—All the unfavorable symptoms are gone; she is feeding well; pulse and respiration are natural.

22nd.—I found my patient quite recovered.

Facts and Observations.

Weights to be used in Medicine.—The Medical Council has decided that for the purposes of medicine there shall be no other weights used than the imperial or avoirdupois pound, ounce, and grain. The drachm and scruple are to be discarded henceforth. Quantities prescribed may be reckoned by grains, applying the decimal system, or the ounce as 480 grains may be used. This plan is to be introduced into the new pharmacopœia.

Chinese Sheep.—M. Legabbe has presented to the Society of Acclimatisation of Paris three Chinese sheep, part of a flock, he says, he has had for several years, numbering at the present time more than three hundred. Their fecundity is remarkable. The ewes breed regularly twice a

year, and produce from two to three lambs, and even up to five, at each birth. The director of the School Farm of the department of the Vosges informs M. Legabbe that one ewe there had produced ten lambs within the year. The wool is at least as good, he adds, as that of other sheep, but, owing to the breeding habits of the females, the quantity is somewhat less. Although the ewes manifest no unwillingness to bring up their whole family, it has been found desirable to allow them to suckle only two lambs each, goats being kept as nurses.

At a recent meeting of the above-named society of Great Britain, it was stated that the flock of Chinese sheep is in a thriving condition; all that were offered for sale were readily purchased, and there is a demand for more. Lord Powerscourt reported the birth of four lambs to one of his ewes. Five lambs were added to the flock of the society in September.

Ova in Infusoria.—The discovery of the existence of ova in some of the infusoria goes far to prove the truth of the doctrine "*Omne vivum ex ovo*." Mr. T. A. Engelmann in 1859 met with specimens of the *Stylonichia mytilus* containing embryonic corpuscles, and in 1861 found others that illustrated a further stage in their history. These latter were individuals of medium size, and mostly contained but one large embryonic globule, placed between the nuclei, close behind the angle of the anal aperture. Placed over it on the central aspect of the animal, there always existed an elliptic or rounded opening, of variable size, which was the outlet for the escape of the mature ovum. On one occasion only was an elongated and rounded dorsal aperture found, in addition to the abdominal foramen just named, and serving, like it, for the escape of the embryos; the act of birth was several times witnessed.

The same observer confirms Müller's discovery of spermatozoa in *Paramecium aurelia*, and says they are not, as usually represented, their ends equally pointed at both extremities, but have a bulky anterior and a thinner posterior extremity, of greater transparency. Their maximum length is 0·008 of a millimètre.—*Annals of Natural History.*

Formation of Organic Compounds. — During the growth of a plant, says Dr. Odling, there is a constant building up of organic compounds of a certain class out of carbonic acid and water, and simultaneously a constant elimination of oxygen. Now just as oxidation tends to separate the carbon and hydrogen atoms of complex molecules, so, on

the other hand, does deoxidation, whether effected in the living organism or the chemical laboratory, tend to combine the separated atoms into comparatively complex molecules, the residues of which become banded together into still more complex conglomerate molecules. In broad antagonism to the doctrines held but very recently as indisputable, it is now known that the chemist, like the plant, is capable of producing from carbonic and water a host of organic bodies; and there seems no reason to question his capability of ultimately reproducing all animal and vegetable principles whatever.

Heat as an Analyser.—M. Plucker is of opinion that no compound body in a gaseous state can escape decomposition, if we augment its temperature sufficiently.

To effect this, he says, we introduce the gaseous body into a Geissler tube; then we heat the minute thread of gas in its capillary portion by means of an induction current, and examine the incandescent thread with a prism.

In two experiments with tubes containing carbonic acid and carbonic oxide, he gave to the gases a pressure of 100 millimètres, and illuminated them with discharges of a large Ruhmkorff coil. In discharging the apparatus in an ordinary way, he obtained the ordinary spectrum of carbonic oxide; but upon interposing a Leyden jar, instantly was seen the beautiful spectrum of oxygen. He therefore concludes that at a lower temperature the carbonic acid is resolved into carbon and carbonic oxide, and at a higher one this latter gas itself is decomposed. Nor is this all, for immediately after the decomposition the temperature falls, and the recomposition of oxygen and carbon ensues.

In another experiment M. Plucker took chloride of zinc. Having introduced a small quantity into the spectrum tube, and made the vacuum as perfect as possible, on heating the tube, first the chlorine spectrum is seen, slightly developed, but easily recognisable. Continuing to heat the gas, this spectrum, which at first augments in intensity, gradually disappears, and that of metallic zinc comes into view. If the tube be now permitted to cool, the phenomena are observed to take place in inverse order; the zinc spectrum disappearing first, and this replaced by that of chlorine.

In citing these examples of decomposition of bodies, as evidenced by spectral analysis, M. Plucker states the decomposition of the vapour of water in the tubes must not be passed over. And, he adds, "the essential character of the analysis thus sketched is that it not only enables us to recognise

particular substances that may enter into the composition of a given body, but to exhibit all its elements. To do this in a sure and complete manner, it is necessary to ascertain for each body the changes which its spectrum undergoes at each successive elevation of temperature. We must also take account of the greater or less facility which different substances offer for the transmission of the current, and likewise not forget the transport of the substance of the electrodes."

The Consanguinity Controversy. — M. Beaudouin communicates to the French Academy an account of his "breeding in and in" with a flock of 300 sheep without any apparent ill effect; but in this, as in similar cases, the alliance between the two sexes was strictly regulated, and all weak and undesirable animals were excluded. In one case, during a period of twenty-two years, a sheep was born in this flock exactly reproducing the primitive type. M. Beaudouin agrees in the main with M. Sanson, but observes that he generalises too fast when he says that the inconveniences attributed to consanguineous connections have no foundation in observation. "We should add," observes M. Beaudouin, "when such unions take place between selected individuals." M. Gourdon, after reviewing the proceedings of the most celebrated cattle-breeders, contends that Durham oxen, New Leicester pigs, Ditchley sheep, and other successful examples, are, however useful to man, monstrosities, constituted in opposition to all the laws of health, and that connections of consanguinity always produce mischief, although it may be convenient to resort to them for special purposes.

Professor Wyman on Infusoria. — The 'American Journal of Science' gives the details of a number of experiments relating to the controversy concerning the generation of infusoria. Professor Wyman, apparently operating with great care, obtains results nearer those of Pouchet than of Pasteur. He boiled various infusions of animal and vegetable matter, and sealed them in flasks containing only air that had been exposed to a red heat. Nevertheless, in a number of instances, he obtained infusoria, usually Vibrio Spirillum and Bacterium, but sometimes ferment cells, monads, and kolped-like bodies. He cannot reconcile his results with the theory of the dissemination of eggs.

Pyrophosphate of Iron. — Professor Chapman considers the pyrophosphate of iron the most preferable of all the salts of this metal, from its being less liable to disagree

with the stomach, as it does not cause any irritation of the gastric surfaces. It may not, he says, supply iron to the blood-globules more promptly than do others, but it has an important property that hitherto has escaped attention, which adds new virtues to the iron, and bestows on this compound advantages possessed by no other. This arises from the phosphoric acid. Phosphorus, the elementary base of this acid, is a normal constituent of the body, being found in a free state in the great ganglionic nervous centres, and combined in various parts, as the brain-fat, bones, &c. It is also a constituent of certain nitrogenized proximate principles, and holds an important place amongst the other elements that contribute to cell-life and nerve-power; hence the therapeutic value of this new salt.

The tonic action of iron is well known. Phosphorus is regarded as a cerebral stimulant, exalting the action of the nerves directly, and that of the heart indirectly, and only a moderate degree beyond the normal tension. When the ganglionic centres are wanting in their natural stimulus, many nervous and neuralgic diseases arise, which are often accompanied with much debility; then it is found necessary to pass phosphoric acid into the blood, which can only be done by giving it in a saline state, with a base that would be assimilated, and thus it is set free. This is accomplished by the iron, which we know is appropriated by the hæmatosine of the blood.

Composition of Sewage.—According to Dr. Letheby, the clear supernatant part of sewage contains a large quantity of amorphous organic matter, with the filaments of various fungi. It swarms with animal life, as beaded Spirulina, Vibriones, and Monads; and soon after exposure to air the higher forms of infusoria appear, as Paramecium, Vorticella, Rotifera, &c. Besides which it contains small particles of animal and vegetable tissues, as the fibres of cotton, wool, &c. The sediment, which is black and glutinous, consists of the remains of undigested food, as muscular fibre, husk and hair of wheat, the cells and starch of potato, and the tissue of cabbage, and other vegetables. It also contains the products of some of the secretions, yellow biliary matter, intestinal mucus, and the crystals of uric acid and triple phosphate from urine. As in the last case, the living animal forms are numerous; and the vegetable growths are Oscillatoria, Confervæ, Vegetable Spores, and numerous Fungi. The mineral part is composed of the *débris* of the streets, black sulphuret of iron, &c.

Extract of Belladonna. — Mr. Squires has proved that the extract of deadly nightshade prepared from all the soft parts of the plant except the leaves, is the most active, although these may be used. The same applies to henbane, hemlock, and other green extracts.

The pharmacopœia process directs the leaves alone to be employed, by which, says Mr. Squires, one third of the useful constituents of the plant is lost.

Extract of Logwood a Deodoriser and Disinfectant.—M. Desmartir states that he has employed an ointment composed of equal parts lard and extract of logwood with extraordinary success in bringing about healthy action in sloughing and gangrenous wounds, and removing at the same time fetid odours.

Conversion of Iron into Steel.—It is the opinion of M. Caron that in the cementation of iron by the various forms of carbon employed it becomes a cyanide. Several experiments were performed by him with the alkaline cyanides, and with decided success. He also thinks that the time required for effecting the change would be shortened if so be some of the alkaline cyanides were *directly* employed. The cyanide of ammonium he found to be the most effective.

M. Fremy is also of opinion that nitrogen exercises an influence over the phenomena of steeling, not only by presenting the carbon in a gaseous state to the iron, but by remaining united to the carbon and combining itself with the metal. He further adds, "Upon the whole, it appears to me, at the present time, impossible to admit that cast iron, fine metal, and steel, are formed essentially by the combination of iron with carbon, and that the difference between them is due simply to the proportion of this metalloid present. The substance which modifies the properties of iron so usefully for the arts, may be sometimes a metalloid and also sometimes a compound; it is then allied to the derivatives of cyanogen, and, like them, is transformed by the action of metalloids; when this substance contains either nitrogen, sulphur, phosphorus, or arsenic, it forms, when united with iron, cast iron, either white or gray and spotted, fine metal and steel."

THE VETERINARIAN, JANUARY 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat. —CICERO.

ANNUAL ADDRESS OF THE EDITORS.

"Deep sounds the knell of the departing year;
Scarce had we time to chronicle its birth,
To write its months, and feel, as it was meet,
Its high demands, before it passed away—
Passed like a shadow, or the lightning's sheen,
Or as a meteor, or a dream of night.
'Twas here—'tis gone! So rapid is its flight."

THE moralist has told us that it is wise to talk with our past hours.

"Hours are golden links, God's token,
Reaching Heaven; but one by one
Take them, lest the chain be broken
Ere thy pilgrimage be done."

Time, like a narrow sandbank, stands between two mighty seas—the eternity of the past and the eternity of the future, and is constantly shifting from the former towards the latter. Periodically, too, the ocean waves roll over it, bringing up to the surface indications of the many wrecks that have taken place upon it. These ever awaken reflections more or less profitable and pleasing, or it may be they are otherwise; nevertheless we shall always do well to draw from them admonitions to guide us in whatever may occur hereafter.

Since our last address another portion of this sandbank has drifted away and become engulphed in the fathomless abyss. Let us look back, and by the aid of thought call to remembrance the past; if the gurgling waters cast up no fragments of a wreck, the footprints will then prove monitors, and afford us texts on which to descant.

A traveller on ascending an eminence delights to look back over that part of the road which he has traversed, and gratefully to acknowledge the support that has been afforded

him in his journey, as well as forward to the portion which still lies before him; for, although it is wisely denied to man to look far into the future, nevertheless a favourable retrospect does much to stimulate to increased energy, and to awaken those feelings that ennoble man.

"The memory of past events," says a modern writer, "as on the rapid wings of time we are ever borne farther and farther from them towards the ocean of eternity, grows dim behind us. Of early life how large a portion seems (perhaps only *seems*) consigned to absolute oblivion. Yet here and there, along the line of retrospective glance, there are points and prominences which seem as they could never die; occurrences which are, as it were, burnt in on the memory, and which the haziness of proximate scenes and incidents serves only to place in bolder relief: just as an increase of distance often makes more conspicuous the mountain peaks, which the proximity of a multitude of minor objects concealed or obscured."

It has hitherto been our good fortune, when analysing the proceedings of the preceding year, to be able to speak in jubilant terms of what has been done, and that no apprehensions existed as to the future. Again we are happy in being able to say that the past year forms no exception, and on turning over the pages of its volume, we think it is not lacking in subjects of interest and importance to the profession. We are not ignorant of the fact that we owe much, if not most, of this to our contributors; nor would we be either slow or ungrateful in acknowledging this, while at the same time we ask for its continuance, because the advantages are mutual.

The translations by Mr. Ernes have kept us *au courant* with what is doing by our professional brethren on the Continent; and Mr. Watson's papers on Botany, as applied to Veterinary medicine, have lost none of their interest. Indebted as we long and often have been to Professor Varnell, it has been considerably enhanced by his voluntarily offering to elucidate the changes that may have taken place in the morbid points that are sent to us from time to time, and which are always more or less instructive. With him we would urge upon the members of the profession to

institute careful *post-mortem* examinations, and in all cases of interest to obtain, as far as possible, the history of them. Such being placed on record they will hereafter be referred to with profit, for Locke has well observed that "the pictures of the mind are painted in fading colours, and unless frequently refreshed they vanish and disappear." If we diligently observe and carefully record our observations, although for a time there may seem to be darkness and ambiguity, in the end light will break in and truth be discovered.

Believing that it would, in no slight measure, increase the worth of our journal, early in the year we expressed a wish to obtain a series of papers on some subject, of course leaving the selection thereof to the author. We soon obtained from Professor Brown, to whom we had been previously indebted, a prompt and kind acquiescence. Although it may be asked, What, has only one responded from among your many friends? We reply to this, all things must have a beginning. An acorn may be considered but an insignificant thing; its development, however, is the majestic oak, and this may produce a forest. A single raindrop may not be noticed as it falls, yet perchance it may cause the rosebud to open, and multiples of it form the rippling rill, which soon expands into a river, that irrigates and fertilizes the soil through which it passes, causing it to become fruitful, and thus to minister to the wants of man.

There was a novelty in our last volume that we cannot refuse ourselves the gratification of commenting on. It was a paper on the all-important subject of Ventilation, by Mr. Walton Mayer, V.S. Royal Artillery Train, read by him at a meeting of the *Army Veterinary Medical Association,* Aldershot. Although the paper itself is replete with interest, and contains statistics of great value, it is not, however, so much in reference to its worth, since it is in the possession of our readers, and they can judge of its merits, that we advert to it, but because of the source whence it emanated. These local associations have our warmest commendation, and we hope soon to know that they are multiplied. There is no reason why every county at least should not possess one. This we have said before, and we

are glad to see that the army has become alive to the good that necessarily must result from them. Moreover we are much pleased to be informed that they have received the countenance and support of the principal veterinary surgeon to the army, for we know him to be ever anxious to promote the advancement of the profession.

There is no doubt that much may be accomplished by associated labour and perseverance. A single honey bee, it is said, with all its industry and the innumerable journeys it has to perform in the summer season to gather honey from the nectaries of flowers, obtains only about a tea-spoonful. Yet from a hive of them, often from sixty to a hundred pounds of this delicious form of sugar are taken. So the ant will "for one poor grain labour and toil and strive," but being gregarious in its nature, in numbers they gather enough food to supply their wants during the long period that nature seals up her sources of sustenance from them. Or, as the wise man has put it, "The ants are a people not strong, yet they prepare their meat in the summer, and are exceeding wise." We might also have referred to the mighty workings of the coral-polyp, and others. Slow growth has indeed been stated to be the law of stability. The enduring and more useful trees do not spring up like the comparatively worthless fungi at their base, or luxuriantly grow like the parasite that entwines itself among their branches, robbing them of support. A rock requires ages to become consolidated: but when this has been attained, in vain do the billows dash against it; they are only thrown off in impotent and noisy foam.

Having so long received support and encouragement, we continue of the same mind we ever were. Nor are we likely, having put our hands to the plough, to turn back. There is something that is soul-cheering even in the endeavours made to perform one's duty. Nor are we altogether, as we think, to set aside "the hope of a recompense of a reward." Our poet laureate is right when he tells us that we shall find—

> "The toppling crags of duty scaled
> Are close upon the shining table-land—
> To which our God himself is moon and sun."

From time to time we have been called upon to insert reports from the West of Scotland Veterinary Medical Association; but where are those of our own? Once we took an active part in it, and it worked well. What doth now hinder it? It should not be forgotten that knowledge, like light, is of little use if restricted in its influence and confined. It is a mistaken notion that good is gained by exclusiveness, and quite unworthy men of science.

It may be that some think but lightly of our labours; yet we confess to have from time to time experienced much gratification in the performance of them, on account of the support, already referred to, that we have received, and the confidence our friends have placed in us. It is pleasant, too, not to loose the hold we have so long been favoured with by those who know us best. Still at times there has been some little anxiety when we have felt the weight of the responsibility; nevertheless we have not shrunk from our duty, believing it to be associated with the best interests of the profession. It is ours to sow, even if it be for others to reap.

"Sow, for the hours are fleeting,
And the seed must fall to-day;
And care not what hands shall reap it,
Or if you shall have passed away
Before the waving corn-fields
Shall gladden the sunny day."

But we have not been without our reward. Some golden sheaves have been gathered in, as seen in the number of years we have been permitted to conduct this journal, and the assurances we continue to receive of support from our numerous readers. May no remissness on our part cause the forfeiture of this; but as experience maketh men wise, so may we through it find the pages of our periodical more than ever conducive to the end we have always kept in view—the onward progress of our art.

At the present day there can be no question but that the press—sometimes called the fourth estate—is an important, if not the most important means for advancement, both professionally and otherwise. It is a mighty engine, and in proportion as we recognise its utility, so should we endeavour to increase its usefulness. It is, therefore, to be regretted

that there are some among us who affect to contemn it, although they are ever resorting to it; and others never contribute to it lest, as they from a mistaken notion think, their professional brethren should become as wise as themselves. Such characters are always ready to receive, but they never give in return. By all such persons as the above, surely science, abstractedly considered, is never benefited. Still there are those who, although not contributors to the press, nevertheless do, by their deportment and practical abilities, aid in the advancement of our common art.

This is necessary, since, without controversy, we live in an age the very antithesis to that designated the dark ages. The torch of science now sheds her glowing light around, dispelling the mists of doubt and apprehension, and emboldening men to aver that, within certain limits, there is no such thing as an impossibility. Well was it recently said by the premier, that "the great improvement of modern times is the diffusion of light or knowledge. With that light comes warmth, and with that a vivifying power which gives animation and life to the whole mass." Nor alone in reference to our own profession should a love of science actuate us, since in all the divisions there is that which awakens thought, and by expanding the mind lifts it from Nature up to Nature's God. Each section holds the other by the hand, forming a grand circle that cannot be broken or interfered with with impunity. Each, too, becomes a liberalizer of the ideas and a civilizer; in proof of which we might refer to the state of those who know nothing of the laws of science. We remember it has been somewhere said that it was held by the ancients that the gods, in their beneficence to man, sold all good things, and the price at which they were to be bought was labour. This fanciful description is not without its practical application, which, however, need not here be made.—"*Labor omnia vincit.*" And the wise man has told us that the soul of the diligent shall be made fat.

Continuing our retrospect we may be permitted to observe, that scarcely a month passes without our having the pleasing task of adding to the list of contributors, the second of which now assumes a goodly proportion. May it continue to increase.

Although we have had to record instances of cruelty to animals, we incline to the opinion that they now occur less frequently than they did, and are also less atrocious. The strong arm of the law has suppressed them, through the instrumentality of the Society for the Prevention of Cruelty to Animals, and the watchfulness of its agents. If it be true that "a merciful man is merciful to his beast," the opposite of this likewise obtains, since a cruel man degrades himself below the beast. Who, possessing the slightest degree of humanity, can witness unmoved the writhings of a dumb animal? And who can inflict unnecessary torture on it? Cruelty has been designated blasphemy in action—the hand of man raised, as it were, to strike the Father of mercies. A cruel man is more and more contemptible in proportion to the height of the nature from which he is regarded; most contemptible, and most abhorrent, therefore, is he in the sight of the Highest. Well may we grudge the title of brave to the cruel. Are they not rather cowards? Is it not a conviction that they are free from all retaliation and revenge that makes such characters brutish; this being associated with a consciousness that they are exempt from all danger? And this surely is not bravery.

Of late our pages have been less encumbered with controversial matters, of which we are glad. We hold the right every man has to express his opinions, and when assailed to resist even with boldness; but then truth itself should be maintained only with judgment and in love. No petty jealousies should be allowed to obtain the mastery, nor any assumption of fancied greatness or superiority; both being alike proofs of littleness of mind. It should be remembered also that infallibility does not belong to man. Above all, personalities should be abstained from. Again and again has it been stated that they never strengthen a bad cause, while they always injure a good one.

In a former Annual Address we urged the advantages arising from combination, showing how this exists in literature, science, and agriculture; the votaries of which, being associated together, may be said to more than double their strength; as on the field of battle, even a small band of brave men, acting in serried rank, shoulder to shoulder, often

present a phalanx which cannot be broken. We thought we perceived some foreshadowing of this union—some indication of its being about to take place. Nor have we been deceived. A more cordial uniting of some of the schools with the body corporate has taken place, and thus each has materially strengthened the other. The pretenders to science have now no standing-place, and it is only for the members of the profession to determine to maintain their justly attained position, and thus to exclude them for evermore. But to effect this we must not be idle. It is not yet time to throw off the armour. Indeed, the battle between ignorance and knowledge admits of no truce, and no quarter can be given to the foe lest he deceive us.

The retrospect we have taken reminds us of the prospect. And it may be asked if we have no new promises and protestations to make? To which we reply, No. We have availed ourselves of the remission of the duty on paper, as will be seen by the number of pages the last volume contained when compared with antecedent ones, and beyond an alteration in arrangement, by which more matter will be found room for, we do not intend to make any further changes. The past must be accepted as an earnest of the future. The motives by which we are actuated are the same as those that influenced us at the beginning—an endeavour to assist in the building up of the temple of our division of science. And this not by heaping up stones promiscuously together, but rather, like the erecting of the temple of old, we would that each stone should be nicely fitted to its fellow, and the whole put together without the sound of hammer or any discord; thus acting in consonance with the advice of the immortal bard—

"Nothing extenuate nor set down aught in malice."

Nor have we any desire, by elaborate word-painting, either to heighten with glowing colours, or lower by sombre tints, our position. We have ever felt it to be a privilege to hold the editorial office, notwithstanding the labour and responsibility connected with it; remembering the motto, "*Post prœlia prœmia.*" It is our wish, as certainly it is our duty, to rise above all personal and party feelings, and, so far as our abilities enable us, to chronicle from time to time

the state of the profession, and to present to our readers proofs of its onward progress, and likewise to aid in this. On the other hand, should we perceive the existence of aught that may militate against our continuance in well-doing, it will be equally our duty immediately to point it out and endeavour to check the growing evil, assenting to the truth of the poet—

"I hold the world but as the world, Gratiano—
A stage where every man must play his part."

Frequently during the past year have we had to record the departure of those who have gone before us to that "undiscovered country" by revelation only made known, although by reason conjectured to exist. The mournful list may not have been so long as some in antecedent years, yet it contains the names of many with whom we once held converse, and time is fast hurrying us down the stream which debouches in the ocean of eternity. Well will it be for us if we can with confident assurance say—

"Happy day that breaks our chain:
That manumits, that calls from exile home."

We close our annual address with the following quotation:

"Death has hovered near you—the death of the body. The shape, which shape hath none, has lurked in the treacherous element, or crept in the slow disease, or breathed its poison in the air. Perhaps it has been sometimes nearer than you dared to think. The dart was caught and blunted by the ministry of loving watchfulness ere it reached the heart at which it was all too surely aimed. The year with all its vicissitudes of season has passed over you, and you have been screened from the summer's smiting, and from the winter's cold. The last harvest-man has reaped thick sheaves all around you, and housed them in his eternal garner, but you live—many among your fellows are missed from their accustomed haunts, but you live. It may be that the shadow has fallen upon your own pathway, and that there are hatchments in your memory for the lost and mourned among your friends, but you live; and through the vista of the opening year you catch a glimpse of the promised blessing, and gaze forward with a sense of lordship and of power."

May the last clause be fully realised by all our readers.

Extracts from British and Foreign Journals.

OBSERVATIONS ON THE LATE SUDDEN AND FATAL ATTACK OF DISEASE AMONG THE EAST-LOTHIAN FOXHOUNDS.

Edinburgh Veterinary College,
8, Clyde Street; *8th December*, 1862.

Sir,—On Tuesday, the 23rd of September last, I received a telegram from Sir David Baird to visit the East-Lothian Kennel, West Salton, where a sudden and violent attack of disease had occurred among the foxhounds, of which several of them had died. Being from home when the message arrived, and having a professional pre-engagement on the following day, it was not in my power to make out my visit until Thursday, the 25th.

On my arrival I learnt from the huntsman (an intelligent and experienced man in his department) that the pack had had a hard day's work—cub hunting in covert—on the previous Saturday, the 20th of September, and had drank freely from two small ponds, out of which cattle are accustomed to drink. The pack was fed as usual on their return, all the dogs being apparently in good health, and that every one of them, at varying intervals, from the time of the second feeding next morning, commencing within six and seven hours afterwards, up to twenty hours, had been more or less violently seized with severe symptoms of disease, the more prominent of which were spasms, vomiting, and purging, and that death had supervened at different periods. I found almost the whole pack in a state of prostration, exhaustion having succeeded the primary violent evacuations from the stomach and bowels, and general convulsions. The therapeutic treatment which I recommended was the employment of an anodyne—laudanum and oil—and restoratives, with external frictions and fomentations. I examined the viscera of several of the dogs which had died. The internal or lining membrane of the stomach was highly inflamed, as well as that of the intestines, through their whole course, and especially in the jejunum, where intussusception had taken place, although invagination of the gut, I believe, is usually found in the colon after morbidly increased peristaltic action. The inflammatory process had permeated from the serous membrane the whole intestinal coats, which appeared in a state approaching to mortification. The extensor muscles of the legs were in a rigid condition. Such a sudden and fatal attack of

disease, with its accompanying symptomatology, naturally suggested an irritant poison as a probable exciting cause. I accordingly ordered the contents of the stomach and intestines of one of the dogs which had died, as well as its viscera, to be placed in a jar, which I brought along with me to Edinburgh for examination and analysis. The whole carcass of another dog was subsequently sent to me for the same purpose, and a relative report was drawn up, which I annex, by Dr. Murray Thompson, Lecturer on Chemistry. The cuticle of that dog, when skinned, was found—a fact deserving to be noticed—to be highly erythematous.

Not having had an opportunity of attending to the disease in its early stages, and desirous of obtaining information as to the progressive development of the symptoms, and of receiving the fullest particulars as to their alleged cause and origin, I addressed a letter to the huntsman on these points, and received the following answer:

The Kennels, West Salton;
30*th Sept.*, 1862.

Sir,—In reply, I beg to inform you that I fed the hounds on Sunday, the 21st, at half-past nine in the morning. All the hounds were fed on the same kind of food and at the same time, and they fed as well as usual. At four o'clock in the afternoon I was walking them out on the grass, and three of the hounds I saw were very unwell; one of them, in particular, was lying on his belly with his legs stretched out quite stiff. I gave them castor-oil immediately. All the others seemed quite well. I was up at five o'clock on Wednesday morning, and when I went into the kennel not one of the hounds could move—all were convulsed and twitching—not one could touch food that day. The first bitch died at three o'clock in the afternoon, the second at half-past four. The inside of every hound that died was in the same state as the one was which you saw. We have lost nine couple, and there is another couple that I have but little hope of. I have sent you a hound that I found dead in the yard this morning. She had not been hunted this season; she fed well yesterday afternoon at four o'clock. Instead of taking her out on the grass with the other hounds, I turned her into the large yard, where the others have been; and whether she picked up anything or not I don't know. The hind part of her, where you see the hair is off, was done when she was out with her puppies. I should like you to analyse her well. I am very anxious to know what was the cause of her death. I shall send her to you by the train this afternoon, sealed the same as this letter. I must tell you, that of the three hounds I gave the castor oil to two of them recovered.

I am, Sir, your obedient servant,
(Signed) John Atkinson.

To Professor Dick, Edinburgh Veterinary College.

The following letter was sent by me to Mr. Atkinson, soliciting further information:

EDINBURGH VETERINARY COLLEGE;
22nd October, 1862.

Sir,—I duly received yours of the 30th September, and have delayed writing to you until the analytic report on the contents of the dog's stomach and intestines was drawn up. Nothing poisonous has been found. You will confer an additional favour by supplying me with replies to the following interrogatories. I understand the dogs were taken out on Saturday morning, the 20th ult., at 6 a.m., and did not get home till 1 p.m.: is that correct? When were they fed after getting home?—and what was their food? Did they seem quite well on Saturday night? Was there any change in their food? How many hounds were taken out?—and whether were they hunted for a longer or shorter period than usual? What were the ages of the dogs? What was the number of the respective deaths among the old and young dogs, as well as the proportion between the dogs and bitches, that died. How many have altogether died? What were the intervals between their deaths? Have the dogs in your kennel at any time been seized with similar attacks, and if so, how many died? Under what circumstances have the dogs been affected, whether in the hunting or close season? What is the difference in their food when hunting or not hunting? Have the dogs which recovered been able to be hunted? How long after their attacks were the dogs able to be taken to cover? You will oblige me by sending me full particulars to these questions, as I propose drawing up a professional paper on so interesting, important, and instructive a subject.

I am, Sir, your obedient servant,
(Signed) WILLIAM DICK.

To Mr. ATKINSON,
Huntsman to the East-Lothian Hounds, West Salton.

I enclosed to Sir David Baird a copy of the preceding letter, when I transmitted to him by post on the 8th of November the medical and analytical report drawn up by Dr. Murray Thomson, with a request that he would be so obliging as to procure the information I was so desirous of obtaining, and which the following communication so fully supplies:

GILMERTON, BY DREM;
Nov. 14th, 1862.

Sir,—Sir David Baird has been very busy for some time past, and has not been able to attend to your letter of the 8th instant. Not being at all well, and feeling anxious that you should not have to wait any longer for an answer to your questions, he has begged me to write to you in reply. You will remember that I answered a number of questions which you put to me one day I called on you, in Clyde Street, early in October. I will now take the questions you put to the huntsman, and answer them *seriatim*.

The hounds must have left their kennel soon after 4 a.m. on the Saturday morning; they were thrown into covert at 6 a.m., and were hard at work till 1 p.m.; they did not get home before 3 p.m.; they were not fed till they had been home for an hour and a half; their food was the customary porridge and milk, with some flesh added; the porridge or puddings being made half of oatmeal and half of Indian corn; they were quite well on Saturday night. The food described above is their usual

food during the hunting season. When not hunting the porridge is thinner, and more milk is given. There were twenty-eight couple out. It was a long day for an opening day, and the weather was intensely hot. The dogs' ages were from seven to one year old. The ages of the hounds that died were—

Dog.	Years old.
1	7
2	6
1	5
2	4
6	3
4	2
3	1

Number of dogs that died . 19

Six dogs and thirteen bitches died. The first death was on Monday afternoon. By Wednesday morning there were five or six couple dead. The rest lingered on for ten days longer, the last case occurring on the fifteenth day. The one-year-old hounds lasted the longest, and at first did not appear to be very seriously ill. The hounds have twice been taken with similar symptoms in each case after hunting in the same covert, *always* early in the season, *never* as the season went on, but never so badly as in the present outbreak. On one occasion Mr. Fletcher lost three hounds out of ten couple affected. Last year several hounds were ill after hunting there, but none died. When hunting, the porridge is thicker than it is when the hounds are off work. All the hounds are now in good work again; they were out in three weeks' time after being seized. I hope these answers will be useful to you. Should you require further information on any point, I shall be happy to supply it.

Yours faithfully,

To Professor Dick, Alex. Kinloch.

Veterinary College, Clyde Street, Edinburgh.

The following report comprises the morbid appearances and chemical analysis:

(*Copy.*) Chemical Laboratory, 8, Infirmary Street, Edinburgh; *Oct. 15th*, 1862.

Dear Sir,—I have now to report that on the 27th ult. (September) I received from your hands a covered jar containing the following organs of a dog:—the stomach, intestines, spleen, liver, and two kidneys, and also at the same time a quart bottle of water.

After I had removed the above to my laboratory I proceeded to examine the viscera, and have to record the following appearances:—I. The stomach was much inflated, its contents, besides the distending air, being about a dessert-spoonful of grayish, gruel-like fluid. The outside coat of the stomach had a greenish colour and partially decomposed aspect; the mucous surface was generally dark green, with here and there dark-red patches and streaks, especially towards the pyloric end. The veins of the stomach were much distended.

II. The intestine was much injected on its serous surface; the vascular state of the mucous surface also betokened inflammation. About two feet below the pylorus there occurred on the intestine a most important lesion in the shape of an intussusception, the invaginated portion of bowel

being about fifteen inches long. Both the inner and outer parts, and especially the latter, were quite gangrenous.

III. The liver was emphysematous, no doubt partly from decomposition; its depending borders were black, also from the same cause; in other respects this organ looked healthy.

IV. The spleen was dark in colour; but it did not present any other unusual appearance.

V. The kidneys were much congested, the outer coat being easy to separate. The cortical portion was soft and brittle; this latter appearance, however, may be accounted for by incipient putrefaction.

The chemical examination was next proceeded with. The cause of death you had reason to suspect was a poisonous dose of strychnia, and my examination, therefore, had special reference to this poison; but after looking for it, I also searched for prussic acid, coniine (hemlock), and the poisonous metals. The water in the quart bottle was first dealt with. It contained abundance of a green confervoid sediment, but the tests for strychnine gave a negative result.

A separate examination of the contents of the stomach itself, the intestine, spleen, liver, and kidneys, resulted in showing the absence of strychnine. The process made use of was the well-known one of Stas. A second attempt to detect this poison was made on the stomach, liver, and kidneys, using this time a modification of Stas's process, and which is reported to be a little more delicate. It was not, however, more successful in showing the presence of strychnia. It should be noted that very small quantities of strychnine, *e. g.* the eighth part of a grain, when distributed through a large quantity of animal matter, cannot be detected by the above processes. Parts of the stomach, liver, intestine, and kidney, were then tested for arsenic, mercury, lead, and the other poisonous metals, but none of these were present.

A search was then made on the stomach and intestine for prussic acid and coniine, the poison of the hemlock, but an entire negative result was got.

I have also to report to you the results of my examination of the second dog, which you told me had died seven days after the first one. Its viscera I took away from the Veterinary College on October 2nd, the organs which I examined being the stomach, intestine, liver, heart, and kidneys. The examination was conducted with the assistance of Dr. Peter Young.

I. The stomach was found distended with food, which consisted of masses of undigested porridge. The serous coat was moderately vascular. The greater part of the mucous coat was healthy, but there were congested portions near the pyloric end.

II. The intestine, chiefly duodenum.—Serous coat was very vascular, while the mucous one was only faintly congested. The contents were a thin grayish fluid.

III. The liver was emphysematous and slightly congested.

IV. The heart was moderately contracted, the left ventricles especially. There was about a teaspoonful of blood, dark and coagulated, in each ventricle.

V. The kidney was very vascular, the serous covering easy to remove, the corticle substance very soft. The kidney was the organ which in this animal was most abnormal in appearance.

The chemical examination was then proceeded with, precisely in the mode pursued with those of the first dog. Strychnine was again made the subject of special search, likewise the testing for the poisonous metals

was also pursued. None of the processes, however, revealed the slightest evidence of the existence of poison in any of the organs examined.

In concluding this report, I have simply to remark that the chemical examination does not throw any light on the death of these animals, nor on the morbid appearances which their organs were found to present.

I am, dear Sir, yours very faithfully,
MURRAY THOMSON, M.D., F.C.S.,
Lecturer on Chemistry, E.M. School.

Professor DICK, Veterinary College.

The preceding report proves the absence of any poisonous material, either in the contents of the stomach and intestines or in the structure of the other viscera, from absorption, which were examined. The prominent symptoms of the disease were vomiting and purging, the effect of the highly-inflammatory action which had taken place in the former organs; but no vegetable or mineral poison, known as such, having been found, the cause of that inflammatory action must be traced elsewhere. The appearances found upon dissection clearly showed the seat and nature of the disease of which the dogs had died, which were distinctly shown in the acute inflammatory process, which had extended over the whole course of the stomach and intestinal canal, involving all their coats, especially their serous membrane. But none of the morbid symptoms were either connected with or dependent upon the presence of any single virulent or irritant poison. To comprehend the true nature of the affection, its history must not be confined to a single view-point, but all the circumstances bearing upon it must be taken into cumulative consideration. And the division of the causes of a disease into proximate, remote, predisposing, and exciting, which the old medical pathologists followed, may not be inappropriately adopted on the present occasion. Now, what was the real state in which the dogs were placed relative to this fatal outbreak? The outbreak occurred at the commencement of the hunting season, before the dogs had been accustomed to work—a circumstance Mr. Kinloch refers to in similar attacks of previous years, although in a much milder form. The dogs had a very fatiguing day's work, and had drunk, when heated, freely of cold water. The day was very close and sultry, and the season of the year was the autumn, when attacks of bowel complaints in the forms of colic and cholera usually prevail in a mitigated or more violent type, according to existing atmospheric influences. In my opinion, the co-operation of all these combined causes can satisfactorily account for the whole pack being seized not long after the second feeding. Their strength was tried by

a hard day's work, to which they had not been seasoned, which may be called the remote cause, and the vigour of the digestive organs would thereby be impaired to a corresponding degree; the predisposing cause was the season of the year—a coincident one—what Sydenham calls the constitution of the atmosphere; the proximate cause was the susceptibility of the digestive organs to functional excitement; while the exciting cause was the food, which acted as a morbid irritant in the impaired functional state of the digestive organs. In accordance with this view, the appearances upon dissection were such as might be expected to have been found. It is well known that the same appearances present themselves in pigs which have died after being overfed. The stomach is found impacted with food, which acts as an irritant poison, causing inflammation of the stomach and intestines, and the cuticle is in the erythematous condition which I found in the carcass of one of the dogs I examined. Braxy in sheep affords an analogous example of the violent inflammatory action in the intestines produced by articles of natural food, when taken under peculiar conditions and in large quantities. This very unmanageable disease is well known to commit its ravages towards the end of autumn, when the hogs accustomed to the dry and withered herbage of the past season are turned on rank aftermaths or secondary growths of grass in sheltered situations, and young heather, which they are fond of, and greedily devour; and when an outbreak of disease among them occurs as speedily and fatally as the one in the East-Lothian kennel, on the dogs being first hunted for the season, having prolonged fatigue in a sultry day, and dieted with a mixture of animal food to which they had not been accustomed, until they are put to work, the morbid appearances after death being the same in both. *Up to the time* of the second feeding, *all the hounds* seemed to be in a healthy state, and *symptoms of disease* only supervened *after* the *digestive functions* had been excited into action by the presence of food, not many hours after it was swallowed, while every dog became similarly affected in a longer or shorter time, all being at the same time exposed to the same exciting cause, the period and virulence of the attack being modified by age, strength, constitution, &c. This explanation as to the *modus operandi* of the food exciting inflammatory action may be objected to on the ground that no bad effects resulted from feeding on the previous afternoon, after the dogs had returned from their severe day's work in covert. But it must be remembered that food which, in ordinary circumstances, acts as a natural

and healthy stimulant to excite the digestive organs to increased action, is not analogous in its operation to an acrid or virulent poison, which manifests its morbid action generally in a very short period of time after being swallowed. The class of deleterious poisons operates, as a fixed rule, violently and speedily, although even arsenic has been known to lie dormant for an unusually long period in the stomach, before producing fatal effects, ascertained by dissection after death when the poison was detected by analysis. But it is an admitted fact that the poisons referred to very soon produce pain and vomiting when taken into the stomach, modified to some degree by the amount of food with which that organ may be charged, but there is no instance on record of the appetite remaining unimpaired upwards of twelve hours after the administration of an acrid deadly poison. It is therefore beyond dispute that there was no poison in the food given to the dogs on the Saturday evening, which was their first feeding, nor in the food they next got on the following morning, as none was found after death upon careful chemical analysis. If the first meal taken after the dogs returned from a long and fatiguing day's hunt proved innocuous, it may naturally be asked, why should fatal results have arisen from the second meal? I have stated that the outbreak must be viewed in all its bearings to the series of the combined co-operating causes. The reaction after fatigue not only does not immediately follow, but usually takes place at a period more or less remote from the time of collapse.

And I can account in no other way for a whole pack of hounds being seized within twenty-four hours after being fed the second time, under the circumstances to which they had been exposed on the previous day, and without any new or additional cause of disordered or deranged functions, than on the supposition that a morbid action had superinduced slowly and insidiously, but to such an extent that the food, in place of acting as a natural restorative in a healthy condition of the digestive organs, was converted into and became an irritant poison. To what other cause, let me ask, can so many deaths, and such a similar train of violent symptoms, be ascribed? In a disordered state of the stomach and bowels, with systematic derangement, a very little food may prove equally detrimental as large quantities swallowed in a healthy and hungry state. The digestive process is greatly impaired when the animal's *vis vitæ* is exhausted by previous bodily fatigue, and is, in addition, oppressed with the more difficult assimilation of flesh, especially after many months

of a previous dietary regimen, consisting entirely of milk and farinaceous and vegetable substances. The death of the bitch (which was not hunted) is a mere exceptional coincidence, and does not invalidate the opinion I have formed of the causes of the deadly outbreak, and may be regarded as a case of colic, terminating fatally at the season it prevails, the tone of her system being reduced by nursing, and thus predisposing her to such an attack. The conclusion to be drawn from these observations, if they are well founded, consists in their practical application, viz., that the greatest care and attention is necessary in the feeding of hounds at the commencement of the hunting season, both with reference to the quantity and quality of the food allowed to them after a long-continued or severe day's hunting.

I am, Sir, &c.,

William Dick.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The half-yearly meeting of the members of this Society was held on Thursday morning, December 11th, in Hanover Square. The attendance was smaller than has been usual of late. The chair was taken by the president, Viscount Eversley.

The secretary, Mr. Hall Dare, read the following report:

Report of the Council.

During the last seven months 23 governors and members have died, while 5 governors and 372 members have been elected; so that the list now comprises—

80 Life Governors,
94 Annual Governors,
1239 Life Members,
3747 Annual Members,
17 Honorary Members;

making a total of 5177, being an increase of 354 since the last report.

The finances are in a satisfactory condition, as is shown by the balance-sheet to 30th of June last; since which time the finance committee have recommended the sale of £1000 stock, and have dischaged all the claims against the Society submitted to them up to the last meeting. The funded

property now stands at £16,488 17*s.*, in the New Three per Cents.

The chemical investigations instituted by the Society are in a state of favorable progress in the laboratory of Professor Voelcker, the consulting chemist to the Society, who is occupied in the experiments as to the most efficacious means of applying guano to the land, and also on the action of superphosphate of lime on different soils of known composition. During the past season he has been engaged in making field experiments on the wheat and mangold crops, the results of which will appear in a future volume of the *Journal*.

During the past summer a threatening disease known as the smallpox in sheep made its appearance in Wiltshire. The origin still remains in some doubt. Professor Simonds, the veterinary professor of the Society, proceeded to the spot, and deemed it prudent at once to order the isolation of the affected and inoculation of the unaffected animals, thus preventing the extension of the disease in its ordinary or natural manner. The disease is now completely exterminated in Wilts, and exists in one flock only in Berkshire. The professor delivered lectures on the subject at large meetings in Warminster and Salisbury, and attended several fairs in the county, with the view of preventing any diseased sheep being exposed for sale. This precautionary measure appears to have been wholly efficacious.

The council have taken measures for obtaining a greater number of nominations from which to select the judges for the country meetings, and will esteem it a favour if the members of the Society at large will from time to time transmit to the secretary the names of men, not only disinterested in themselves, but fully qualified by their abilities and experience for the arduous task confided to them.

The metropolitan meeting in Battersea Park has proved eminently successful in carrying out the objects of the Society, although the expenses incurred have entailed a heavy charge on its general funds. The interest attached to the exhibition of live stock on that occasion was increased by the numerous specimens of foreign stock sent over at a great expense by the Dutch, French, Saxon, and Swiss governments, as a token of friendly regard to the Society and the international character of the meeting.

The members were honoured by the gracious presence of His Royal Highness the Prince of Wales and with numerous other royal and distinguished personages, who all expressed themselves highly gratified at the number of the stock, the

variety of the breeds, and the high character which so large a proportion of the animals exhibited. The Highland and Agricultural Society of Scotland also held its annual show of stock within the Society's enclosure, and by their numerous entries greatly increased the magnificence of the display.

The attendance of governors and members of both Societies was unusually large, and this proves to the council that the privilege of free admission to the showyard is highly valued, and though tending to diminish the receipts at the gate, is nevertheless largely conducive to its prosperity in an accession of members. The exhibition of the horses in the ring twice each day proved a most attractive feature, and means will be adopted in future to continue this portion of the show.

The exhibition of steam-cultivators at Farningham proved a source of great attraction, and though an item of considerable expense to the Society, the council think they could not do otherwise than show to all the foreign nations assembled this year in London the results hitherto attained in the application of steam to the cultivation of the soil.

On the Sunday during which the stock was in the yard Divine service for the servants and men employed was performed by the Lord Bishop of Bath and Wells, assisted by a choir from the Training College at Battersea.

The collection of wool in the International Exhibition at South Kensington has been an object of great interest to all connected with this branch of animal products, and has been the means of making foreigners more intimately acquainted with the various descriptions which our country produces. Seventeen medals and eighteen honorable mentions were awarded to various exhibitors in the Society's stand, and the council feel they have been justified in incurring the expense of exhibition by the notice and encouragement afforded to the exhibitors.

The implements for which prizes will be given in the ensuing year consist of fixed and portable steam-engines, fixed and portable finishing machines, hand-dressing machines, and barley-hummellers; and as a period of five years will have elapsed since the trial of these classes of implements, it is to be anticipated that many improvements will be exhibited at Worcester.

The country meeting next year will be held in the week commencing Monday the 20th July, and the authorities of Worcester have already placed the land for the showyard under a due course of preparation by drainage and levelling.

By order of the council,

H. Hall Dare, *Secretary*.

Mr. Clare Sewell Reed moved the adoption of the report, and in the course of his remarks made special allusion to the advantages which he himself had, in common with many members of the Society, derived from the veterinary privileges possessed by the members.

The motion was seconded by *Mr. G. H. Badham*, and unanimously carried.

Mr. Fisher Hobbs, in the absence of General Hood, chairman of the finance committee, next presented the following balance-sheet:

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

HALF-YEARLY CASH ACCOUNT, FROM 1st JANUARY TO 30th JUNE, 1862.

DR.

	£ s. d.	£ s. d.	£ s. d.
To balance in hand, 1st Jan., 1862:			
Bankers	1827 19 7		
Secretary	6 15 6		
			1834 15 1
To Income, viz.:			
Dividend on Stock . . .	252 9 11		
Subscriptions:			
Governors' Life-composition . .	50 0 0		
Governors' Annual .	430 0 0		
Members' Life-compositions .	728 0 0		
Members' Annual .	3253 9 0		
	4461 9 0		
Journal:			
Advertisements . . .	31 1 6		
Establishment:			
Sale of Books . . .	44 16 0		
			4789 16 5
To Country Meetings:			
Leeds	9 2 0		
London Show . . .	1474 8 0		
			1483 10 0
			£8108 1 6

CR.

	£ s. d.	£ s. d.	£ s. d.
By Expenditure:			
Establishment:			
Official Salaries and Wages . .	337 6 3		
House Expenses, Rent, Taxes, &c. .	379 0 3		
		716 6 3	
Journal:			
Printing . .	389 4 0		
Stitching . .	60 10 0		
Delivery, Advertising, &c. . .	126 4 0		
Literary Contributions . .	37 0 0		
Editor's Salary .	250 0 0		
		862 18 0	

	£ s. d.	£ s. d.	£ s. d.
Chemical:			
Consulting Chemist's Salary . .	150 0 0		
Grant for Investigations, 1862 .	200 0 0		
		350 0 0	
Veterinary:			
Grant to Royal Veterinary College .	100 0 0		
Illustrations for Paper on Rot in Sheep .	12 9 6		
		112 9 6	
Postage and Carriage . . .		34 17 5	
Advertisements . . .		18 2 6	
Sundries		6 8 7	
Subscriptions returned (paid in error) .		3 0 0	
Memorial to late Prince Consort .		100 0 0	
Wool at International Exhibition .		76 1 1	
			2280 3 4
By Country Meetings:			
Leeds		110 9 6	
London Show		2792 8 11	
			2892 18 5
Total payments .		. .	5173 1 9
By Balance in hand:			
Bankers		2916 19 10	
Secretary		17 19 11	
			2934 19 9
			£8168 1 6

Balance-Sheet, 30th June, 1862.

LIABILITIES.

	£ s. d.	£ s. d.	£ s. d.
To Capital:			
Surplus, 31st December, 1861 .			16081 9 6
Surplus of Income over the Expenditure during the half-year, viz.:—			
Income . .	4789 16 6		
Expenditure . .	2280 3 4		
		2509 13 1	
To Leeds Meeting:			
Difference between Receipts and Expenditure, the former exceeding the latter by		4449 14 2	
			6959 7 3
			£23040 16 9

ASSETS.

By Cash in hand	2934 19 9
By New 3 per Cent. Stock £17488 17*s.* 10*d.* cost .	16797 16 1
By Books and Furniture, Society's House, Hanover Square	2000 0 0
By Account at debit of London Show . . .	1308 0 11

	£	s.	d.
MEM.—The above Assets are exclusive of the amount recoverable in respect of Subscriptions in arrear 30th June, 1862, which at that date amounted to £807			
	£23040	16	9

(Signed) A. N. HOOD, Chairman of Finance Committee.
QUILTER, BALL, JAY, & Co., Accountants.

Examined, audited, and found correct,
this 5th day of December, 1862.

(Signed) WILLIAM ASTBURY,
HENRY CORBET,
WILLIAM COHEN.

Mr. Fisher Hobbs said he had further to state, at the request of General Hood, that although the debtor and creditor account of the Battersea show was not quite complete, the following might be relied upon as an approximate estimate of the receipts and expenditure:—Receipts, £12,159 14*s.* 10*d.*; expenditure, £15,793 9*s.* 4*d.*; showing a loss of £3,633 14*s.* 6*d* He might add that, although the loss on the Battersea show was so great, yet the council hoped that, in consequence of the increased number of members and the increased popularity of the Society, owing to the extensive arrangements which were made, the result would in the end be satisfactory. (Hear, hear.)

A discussion ensued, in which several members took part; after which, on the motion of Lord Berners, seconded by Lord Walsingham, a vote of thanks was given to the noble President, Viscount Eversley, for his able and efficient conduct in the chair.

THE SMITHFIELD CLUB.

THE annual meeting of the Smithfield Club took place on Tuesday, December 9th, in the Club-room of the Agricultural Hall. Lord Feversham, the President, occupied the chair, and was supported by the Earl of Dartmouth, Lord Berners, Lord Tredegar, Lord Walsingham, the Honorable General Hood, and a large number of members.

The award of the judges and other routine business having been disposed of, on the motion of Mr. Torr, the Right Honorable Lord Tredegar was elected President for the year 1864, to succeed Lord Walsingham as President for the ensuing year. The vice-presidents and other officers were likewise elected.

General Hood brought forward a motion, of which he had

given notice,—"That the future management of the Smithfield Club be vested in a council, consisting of the president, vice-presidents, trustees, honorary secretary, and twenty-four members, one third to retire annually, but eligible for re-election." The motion, after being altered to the effect that the retiring members should not be eligible for re-election for one year, was carried, and twenty-four members of the council were appointed.

Another important motion was made by Mr. Milward in reference to the five-shilling day. The general understanding was that, instead of (as has been the case this year) having all the cattle in on the Friday, and the judgments made on the Saturday, the cattle shall arrive on the Saturday, as formerly, thus giving them a day's rest; that double the number of judges should be appointed, so as to conclude their duties about one o'clock on Monday, at which time the show should be opened as a "five-shilling" day. This view was generally accepted, and referred to the newly appointed council to be carried out.

After the disposal of some routine business, and the election of thirty-six new members of the club, the meeting adjourned.

MEMORIAL TO THE LATE JONAS WEBB.

A MEETING of the friends of the late Mr. Jonas Webb, of Babraham, was held on Friday afternoon, in the Board-room of the Agricultural Hall, the object being to decide on the best means of expressing their appreciation of his high character and of the services he has rendered to the cause of agriculture. The movement was originated by a few gentlemen who had felt deeply impressed with the loss which has thus been sustained, and were at the same time convinced that the sentiment was shared in by the farming interest at large, who would promptly unite in the work of raising some desirable memorial of Mr. Webb's not less unostentatious than successful and useful career.

Amongst the gentlemen present were observed the Hon. Elliot Yorke, M.P. for Cambridgeshire, Mr. Cox, M.P., Professor Simonds, Mr. Sutton, Mr. S. Druce, Mr. Fisher Hobbs, Mr. Brandreth Gibbs, Mr. Clare Sewell Reed, Mr. J. Adams, Mr. Leeds, Mr. J. Overman, Mr. Samuel Jonas, Mr. John Carter Jonas, Mr. Clayden, Mr. Turner (Sussex), Mr. J. Druce, Mr. C Dorman, Mr. H. Strafford, Mr. F. Peck, Mr. J. Banister, Mr. Giblett, Mr. J. W. Browne, Mr. J. N. Lee, Mr. J. Howard, Mr. C. Comfort, &c.

Mr. J. Clayden, the Chairman of the Committee, explained the circumstances under which the meeting was convened. It was thought by Prof. Simonds, Mr. Turner, and other gentlemen, that the Smithfield Show ought not to be allowed to pass over without an expression of the sense of the loss which the agricultural interest had sustained by the death of their late lamented friend, Mr. Webb. (Hear, hear.) That loss was indeed great, for Mr. Webb was one of its highest ornaments, and fewer men ever stood higher than he did in the estimation of his class and the persons with whom he associated. He was renowned for his integrity, his uprightness of character, his honesty of purpose. In fact, his word was his bond, and was so regarded by the entire body of farmers throughout the country. It was Mr. Webb's good fortune to have made many friends, for he invariably impressed every one with a favorable opinion of him. No one could be introduced to him without being satisfied that they were making the acquaintance of a man who was himself the soul of honour It had been said that an honest man was the noblest work of God; and if ever a man existed who was entitled to that character, it was certainly their friend Mr. Webb. In him they had all lost a friend; but by those who had him for friend and neighbour the loss was felt to be still greater. He (Mr. Clayden) had known him for many years, and had pulled together and worked with him; and never, by one act or word, or even thought, he believed, had a shade been cast over their intimacy. He felt now that they were bound together by very dear ties. But his and their old friend was gone from among them. Let them hope, however, that their loss was his gain (Hear, hear). In conclusion, Mr. Clayden stated that he had received letters from Lord Berners, Mr. Charles Stokes, Mr. Sandy, Mr. Folkes, Mr. Thurnall, and many other gentlemen, all approving of the object for which the meeting was convened. He then moved that the Hon. Elliot Yorke, M.P., brother of the Earl of Hardwicke, should take the chair.

The motion was agreed to *nem. con.*, and Mr. Yorke assumed the chair accordingly.

The Chairman said the remarks which had been addressed to the meeting by Mr. Clayden expressed what every one must feel with regard to the private worth of their late much-lamented friend, whose real boast might, in few words, be said to have been that they who knew him best would love him most. (Hear, hear). The business of that day was confined principally to that of recording, by a memorial, the estimate which was so universally entertained of the great public services which Mr. Webb had rendered to the agricultural world. There was no question that the adoption of such a step was quite a stride in the annals of agriculture, and he trusted that they would mark, by the zeal and energy they displayed, their sense of the important character of the work. Kings, warriors, statesman; the three black graces—Law, Physic, and Divinity —all of these had their idol and their image; but he did not know that there was one instance in which a public testimonial had marked any one individual who had distinguished himself in the agricultural world. The present, then, was a great opportunity, and it must not be lost. (Hear, hear.) He came, therefore, to the practical part of the matter—How could they best do this? If they desired to do that which was worthy of their friend, the means must be provided for doing it. The meeting before him was one of weight and influence; the individuals of whom it was composed might be termed representative men in their several districts; and they would, no doubt, induce many of their friends to combine in the good work. He was ambitious that a large fund should be subscribed. Indeed, they could not do what they ought without it. He wished to

see erected in the adjoining Hall something that everybody could look at, and which would serve to remind posterity of a noble example set them by their distinguished friend—his career of unblemished honour,his fine judgment, his great skill, and the rare liberality he displayed in prosecuting his various enterprises. (Hear, hear). There was nothing unbecoming in the conception, if in fancy he saw standing in the beautiful Hall adjoining such a statue of their friend as they could all recognise. (Hear, hear). Well, if it was to be a statue, let it be a fine work; and he had no hesitation in saying, if they could not find sufficient art in this country, let them go and seach for it elsewhere. (Hear, hear). He could imagine that nothing would be more gratifying to them than that the memorial should take that form; for Mr. Webb was, indeed, a fine type of a man. (Hear, hear). He might illustrate this fact by an anecdote which was related to him a few days ago. As Mr. Webb was about to take passage on his last visit to France, a person came up to him and said, "Are you not Mr. Jonas Webb, sir?" "Yes," answered Mr. Webb, "I am; do you know me?" "No," said the man; "but I was told to deliver this letter to the finest-looking man I saw stepping on board the steamboat." (Hear, hear). Mr. Webb was all this and more. He was also above every prejudice; and he (the Chairman) would like to see him standing, as was so frequently his wont, and with his hat in one hand, whilst he pointed his stick with the other. (Hear, hear). He should also wish to see a portion of the funds invested providing a gold medal—say of twenty-five or thirty guineas—for the best pen of those loved companions of his, the beautiful Southdown sheep. All this would, of course, depend upon the extent of the subscription; but, whatever was done, he trusted they would execute their mission in such a manner as to secure general approbation, disarm criticism, if possible, and do justice to the memory of him who, in the language of Thomson, might be termed "our Shepherd King" (loud applause).

Mr. J. S. Turner (Sussex), in moving the first resolution, expressed his entire concurrence in all that the Chairman had said respecting their late friend, to whose memory he trusted they would show their gratitude in a manner that would be worthy alike of themselves as Englishmen, and of the place which he occupied in their esteem. Mr. Turner then moved—"That it is desirable that the agriculturists of the United Kingdom, as well as the numerous personal friends of the late Mr. Jonas Webb of Babraham, should mark their sense of his admirable public and private character, and of the inestimable services he has rendered to the cause of agriculture, by some permanent memorial."

Mr. Fisher Hobbs felt great diffidence in rising to second the resolution, because he could not find utterance for the emotions which agitated him on this mournful occasion. He was an old friend of the late Mr. Jonas Webb, having known him for upwards of thirty years, and there was not one word that had fallen from the Chairman and Mr. Clayden in which he did not perfectly coincide. In Mr. Webb the agricultural interest had lost, if not the brightest, at least one of the brightest ornaments that had been known in their day; for since the days of Bakewell no man deserved so distinguished a position in their regards as their departed friend. The proposition which had been shadowed forth by the Chairman was one that would be received most cordially by the friends of Mr. Webb. When first the subject was broached, he (Mr. Fisher Hobbs) ventured to express the opinion that the best method of testifying their respect for their friend, was to erect a statue to his memory in the Hall adjoining, and that, if sufficient funds could be raised, they might either here, or in that great national institution, the Royal Agricultural

Society of England, to which he had rendered such valuable services, establish a gold medal prize superior to all others, in order to perpetuate his great name. (Hear, hear). He saw many personal friends of Mr. Webb around him, and he was sure that, as Southdown breeders, they would rather gain the Jonas Webb medal than any or all of the other medals that the Society could offer. (Hear, hear). He (Mr. Fisher Hobbs) had learned much from his late friend in the earlier period of his own career as a sheep breeder. He remembered that the first occasion on which he had the pleasure of meeting him was at Mr. Ellman's, in Sussex, and the points which Mr. Webb had on that and subsequent occasions brought before his mind, with regard to Southdown sheep, were such as he had always carried into practice ever since. The present opportunity, then, ought not to be lost for recording the opinion of the agricultural world on Mr. Webb's great value as a breeder of stock, not only of Southdown sheep, but of short-horned cattle. His name enjoyed a world-wide renown, and having associated with him on the Continent, he (Mr. F. Hobbs) could bear his personal testimony to the high estimation in which he was held there, as well as in his own country. (Hear, hear). He seconded the resolution with a great deal of pleasure.

The resolution was then put from the Chair, and carried unanimously.

Mr. Rigden (Hove, Brighton) moved the next resolution, viz., "That each subscription shall not exceed five guineas, and that the following noblemen and gentlemen be the 'Jonas Webb Memorial Fund Committee.'" He sympathised with all that had been said by previous speakers with regard to the excellent qualities and great services of their late friend. He had known Mr. Webb for twenty-five years, and had been a continuous breeder from the famous Babraham stock as long as any man. Having had numerous business transactions with Mr. Webb, he could take upon himself to declare that he was a thoroughly honorable and straightforward man. (Hear, hear).

Mr. J. M. Browne (Uffcott, Swindon) seconded the motion, and testified to the general sentiment of regret with which the death of Mr. Webb was regarded by all classes in the county of Wilts.

The resolution was put to a show of hands, and agreed to *nem con.*

Mr. Brandreth Gibbs said he rose to propose the third resolution, and the difficulty which he should have otherwise have felt in doing so was removed to a considerable extent by the knowledge that it was one which would readily meet their approval. It was that Professor Simonds and Mr S. Sidney be requested to act as Honorary Secretaries. As a secretary himself, he was perhaps somewhat precluded from dilating on the importance that was attached to that office. Still, without going beyond the bounds of prudence, he might say it was universally acknowledged that no undertaking could well progress unless it were provided with an active secretary who would give it thorough co-operation and support. After the feeling remarks that had already been made in reference to their lamented friend, anything that he could say must indeed fall mute upon their ears. Yet, having been associated with the late Mr. Jonas Webb for nearly twenty years, he could not help paying a tribute of respect to his memory. He had said that he had known Mr. Webb for nearly twenty years, and that not only in the Smithfield Club, but also in the Royal Agricultural Society of England. During that period it had been his good fortune to find his place almost always next to Mr. Webb's. I miss him, gentleman, there (proceeded Mr. Gibbs); I miss him here at the Smithfield Show; England and Agriculture will miss him too. It is particularly unfortunate, moreover, that at a period like this, and just when the great work in which he had taken so deep an interest

had reached its consummation, he should have been taken from amongst us. I can scarcely allude to this subject, as it seems to cast a cloud over the brilliancy of the undertaking—a gloom which tells us that the voice which once sounded so familiarly in our ears will never be heard again; and that the noble, the modest, the manly, open brow, which won the confidence of all who approached him, will now be seen by us no more for ever (Hear, hear). It is not for me to trace him along his bright and useful career. It is not for me to chronicle those successes and triumphs which he had won in bygone years; but it is for me, it is for each of you, it is for all agriculturists, to strive to follow the example of that great departed man, and to do their duty in the sphere in which it has pleased Providence to place them. I feel that when any of you, in your counties or in your families, want to point to an example for your children and your children's children to follow, you will point to the character of the late Jonas Webb, as of one who, though lost to sight, is still to memory dear (loud applause).

Mr. H. Strafford seconded the motion, and observed that the late Mr. Webb was truly a man of mark, whose name deserved to be handed down to the remotest posterity.

The motion was agreed to.

Mr. Clare Sewell Reed had not enjoyed the advantage of an intimate acquaintance with the late Mr. Webb; but his handsome face, his noble form, his courteous, his amiable, his affable, and friendly manner must have impressed every one most favorably; and he was sure they had marked him out as the very *beau ideal* of a British yeoman. It had been said, and rightly said, that the man who made two blades of grass grow where there was only one before, did more for the service of his country than a whole host of statesmen and warriors; and he would say that, in these days of dear meat, the man who gave us the means of producing two pounds of mutton where only one was produced before, did a great deal more for agriculture, and entitled himself to the gratitude, not only of his own class, but of the nation at large (cheers). He begged to move that Messrs. Fuller, Banbury, and Co. be the treasurers of the fund.

The motion was seconded by *Mr. Druce*, and carried.

Mr. J. Howard proposed a vote of thanks to the Hon. Elliott Yorke for his conduct as chairman. With the appropriate remarks of the hon. gentleman in opening the business he entirely concurred; he was sure they had received a hearty response from every gentleman present. The admiration in which the late Mr. Jonas Webb was held was not confined to agriculturists (Hear, hear). He (Mr. Howard), speaking as a manufacturer, begged to say that all classes admired the manly form, the noble presence, the affability, the intelligence, the good humour, combined with modest dignity, that constituted the elements of Mr. Webb's character. He was sure that the movement now initiated would be supported by the whole body of manufacturers throughout the kingdom (cheers).

Mr. Clayden having seconded the motion, it was carried by acclamation, and a few words in acknowledgment by the chairman terminated the proceedings.

Before the meeting separated a subscription was opened, and upwards of 150 guineas contributed to the "Jonas Webb Memorial Fund" in the course of a few minutes.

MEETING OF THE AGRICULTURAL HALL COMPANY.

On Wednesday, December the 10th, the Agricultural Hall Company held its second ordinary general meeting at their office, on the northern side of the Hall, which was presided over by Mr. John Clayden, the newly elected chairman, who congratulated the shareholders on the completion of their enterprise, and on the success which had hitherto attended the show

Mr. S. Sidney, the secretary, read the report and financial statement, which congratulated the proprietary upon the finishing of the Agricultural Hall and the opening of the show, but expressed deep regret that their late excellent chairman, Mr. Jonas Webb, had not been permitted to witness the completion of the work in which he took so warm an interest. The receipts in money paid in shares on the capital of the company, &c., was £38,975 8*s.* 4*d.*, and the disbursements, including contract for building the Hall, £24,980, land and approaches, £2250, superintendence of contract, including architect's fees, £1909, &c., amounted to £32,106 4*s.* 5*d.*, leaving a balance in favour of the company of £6869 3*s.* 11*d.*

The report was adopted unanimously.

The four retiring directors were unanimously re-elected, and Messrs. Quilter, Ball and Co., were elected auditors, in place of Mr. J. Carter Jonas, who was unable to continue the duties.

Votes of thanks were then passed to the Chairman, and the board of directors. A similar compliment having been paid to Mr. Sidney, the secretary, for his indefatigable zeal throughout the progress of the undertaking, the proceedings terminated.

The number of persons visiting the show during the five days it continued open was 135,050, from whom was received £7039 10s. 6d., which sum, added to £166 3s. 8d. arising from the sale of the Catalogues, made the total receipts £7205 14s. 2d.—a success which the most sanguine could not anticipate.

NEW MEMBERS OF THE PROFESSION.

At a meeting of the Court of Examiners, held at the Royal College of Veterinary Surgeons, on Wednesday, December the 17th, 1862, the following students of the Royal Veterinary College passed their examinations :

Rupert Mosley, London.
Joseph Thomas Bushman, Curragh Camp, Ireland.
James Worsley, Worsley, Lancashire.
John Joseph Sperring, Barnet, Herts.

PRELIMINARY EXAMINATIONS BY VETERINARY SURGEONS OF THE HORSES SHOWN AT THE MEETINGS OF THE ROYAL AGRICULTURAL SOCIETY.

At a special meeting of the Council held on Wednesday, December 10th, Lord Walsingham in the chair, Mr. Fisher Hobbs, as chairman of the Special Committee appointed on the subject of the veterinary examinations of horses, presented the report, which recommended, in the first place, that the preliminary examination by a local veterinary surgeon be dispensed with.

Secondly, that the horses sent for exhibition should be examined within the showyard, and that such animals as did not pass should be placarded as excluded from competition.

After a long discussion, in which Mr. Fisher Hobbs stated that such members of the Committee as were present were by no means unanimous as to the recommendations in this report, he went on to move that the preliminary examination be continued, and that a proper form of certificate be prepared by the veterinary committee, and filled up by a veterinary surgeon residing in the district where the entry was made.

On a division, it was found that twelve members of Council voted for the motion, and twelve against it, when the chairman gave his vote against the report of the Committee, and in favour of Mr. Fisher Hobbs's motion, which was carried accordingly.

Veterinary Jurisprudence.

EXETER DISTRICT COUNTY COURT.

Before JUDGE TYRRELL.

ALLEGED BREACH OF WARRANTY RESPECTING THE BUTTER-YIELDING PROPERTIES OF A COW.

PERRAM *v.* WHITE.

THIS was an action brought by the plaintiff, a cattle dealer, residing at Marsh Barton, Alphington, to recover £12 damages sustained by him on the exchange of a waggon and cow, through the misrepresentation of the defendant concerning the said cow.—Mr. Floud appeared for the plaintiff, and Mr. Fryer for the defendant.

The plea set up by the plaintiff was that the defendant, a cattle dealer, of Bow, warranted at the time the exchange took place that the cow would yield a pound and a quarter of butter *per diem*. The first time the cow was milked she only gave three pints, and at no time did she ever yield more than a quart of milk. He gave £12 for the waggon, which he considered a bargain; indeed, he would not have sold it for less than £14.

Mr. Tozer, farrier, of St. Thomas, examined the cow, and found it was unsound, the lungs being perfectly rotten.

Mr. Fryer denied that a warranty had ever been given; in fact, such a thing could not have been further from his client's thoughts. He then told his Honour that the plaintiff purchased this cow for the purpose of taking it to the Exeter market, and placing a calf by her side, to sell them both together, thus to mislead the purchaser, by making him believe that he was buying a calf which belonged to the cow; and if a man would do that, he asked his Honour whether he could place reliance upon any statement he might make?

The defendant, on being called, said he actually refused to warrant the cow as a sound one. When he bought the cow she was not warranted. The plaintiff never asked him if the cow was a sound one; if he had, he should have given him a truthful answer. The waggon he received in exchange for the cow was only worth about £5.

Defendant's wife, on being called, said she told the plaintiff the cow was a very good "creamer," but not a good "milker." The cow used to produce a pound and a quarter of butter.

His Honour said he had no doubt whatever the plaintiff was entitled to recover. As to the evidence of the cow, in the state in which it was, giving a pound and a quarter of butter or cream a day, he utterly disbelieved it. He should, therefore, give judgment for plaintiff for £10.

Mr. Fryer asked his Honour to order the waggon to be given back in lieu of the money, but his Honour refused to make such an order.

On the application of *Mr. Floud*, the plaintiff was allowed £3 for expenses.

Mr Fryer—I don't know, your Honour, whether, in giving a judgment for £10, you have taken into consideration the fact that the plaintiff subsequently sold the cow for 50*s*.

His Honour.—I have taken everything into consideration.

St. ALBAN'S COUNTY COURT, Nov. 21st.

Before J. Wigham, Esq.

NIGHTINGALE *v.* CHESHER.

This was an action arising out of the warranty of a horse, which was alleged by the plaintiff to be unsound.—Mr. Codd, instructed by Mr. Annesley, for the plaintiff; Mr. Blagg for defendant.

Mr. Codd having opened the case to the jury, called *Mr. Nightingale*, who said, I reside at London Colney. The defendant is a baker, living in the village. Was at St. Alban's Market on the 13th of September last, and rode home with the defendant. On the road he asked me if I would buy the mare. I replied I would if he would warrant her sound. He agreed to do so, and asked £16 or £18 for her. I believe it was £18. I offered £15, but he refused to take that sum. In the evening of the same day I went down to the Bull and Butcher public house. The defendant came in, and we remained together for an hour. During that time nothing took place about the mare. Chesher. and Field (the landlord) went out of the house together, and remained out for about half an hour. On returning, Chesher asked me if I would buy the mare, to which I replied, I do not care about her. Defendant then said, Will you give £14 for her? I declined, for I was short of keep. Field then offered £14 for her, and defendant sold her to him. I then offered Field a crown for the bargain, which was agreed to, and a cheque for £13 and a sovereign was handed to the defendant. He said the mare should be delivered on Monday morning. Before the mare was delivered I asked the defendant if he warranted her, to which he replied, "Yes, for a month, if you like." I then took the mare from his field to my own meadow.

About three weeks after she went lame in the near fore-leg. I saw defendant in the evening, and I told him the mare was lame, and was sorry for it, as I could not keep her. Defendant then said he should have nothing to do with her. I afterwards sent her to Mr. Silvester and received a certificate of her being unsound. I then instructed Mr. Annesley to write to the defendant, and afterwards had the mare sold by auction at the market for £9 9*s*. The expense of sale and loss is £7.

Cross-examined—The defendant did say he would take her back for half-a-sovereign, but I thought he was only joking at the time. He would not take her afterwards. Mr. Silvester did bid me £12 for her; had asked before I found out she was lame £18 for her. I did not want her for any particular use when I bought her.

Mr. Silvester, veterinary surgeon, said, On the 11th of October I examined the mare, which was decidedly lame. The cause of the lameness was a splint on the fore-leg. Did not consider it was a permanent lameness, but thought the mare would recover in two or three weeks with proper treatment. A splint may or may not cause permanent lameness. The lameness rendered her unsound for the time.

Cross-examined—I offered £12 for the mare, and considered she would soon come sound again.

Mr. Blagg then addressed the jury for the defendant, whom he called, and who said, I live at London Colney. Plaintiff was at St. Alban's market on Saturday, September 13th, and asked me for a ride home. He offered me on the road home £15 for the mare. I asked him £18, and told him he could not see what she was. I did not take his offer. In the evening I met the plaintiff at Field's, and asked him if he was going to buy the mare. He replied, "No, I do not care about

her." Field then offered £14 for her, and I concluded the bargain. Plaintiff then offered Field a crown for buying the mare, which Field accepted, and plaintiff laid down a cheque for £13 and one sovereign, and Field handed the money to me. I never warranted the mare, nor had I any conversation whatever with Field about the mare. I had nothing to do with the bargain with Field at all. Field bought the mare for his father, who had bid £10 and a load of hay for her at St. Alban's.

Cross-examined—The mare had been once lame before I sold her, but she came right again. I refused £15 on the way home. I did not say "I'll warrant her for a month if you like." Field's father took the mare to Barnet fair to sell for me.

Thomas Field, landlord of the Bull and Butcher, London Colney, corroborated the previous witness.

Mr. John Field, father of the last witness, stated that he had authorised his son to buy the mare for him at £14, she was now in his possession, and was quite sound. Mr. Grange, of Butterwick Farm, bought her at the sale.

Mr. Codd having replied upon the evidence, the foreman of the jury said they would not trouble his Honour to sum up, as they were unanimous in opinion that at the time the sale was effected the mare was sound, and that the lameness was only of a temporary character.

Verdict for defendant, costs allowed.

ARMY APPOINTMENTS.

War Office, Pall Mall, *Dec. 9th*, 1862.

Royal Artillery.—Supernumerary Veterinary Surgeon, Robert Marshall, from the Military Train, to be Veterinary Surgeon; *vice* E. T. Cheesman, appointed to the 3rd Dragoon Guards.

Acting Veterinary Surgeon, William Barker Walters, to be Veterinary Surgeon; *vice* John Mills appointed to the 18th Hussars, Nov. 26th.

OBITUARY.

Death has again been busy in our ranks. We have now the melancholy task of recording the decease of—

Mr. Daniel Bovett, Bridgewater. Diploma dated Feb. 25th, 1835.

Robert Cook, Erith. Diploma dated April 27th, 1848.

Bernard Reynolds, Newbridge, Ireland. Diploma dated May 7th, 1851.

And also, on December 21st, Herbert Horatio Heraud, Calne. Diploma dated April 30th, 1847.

THE

VETERINARIAN.

VOL. XXXVI. No. 422. FEBRUARY, 1863. Fourth Series. No. 98.

Communications and Cases.

ON SOME OF THE DISEASES OF THE STOMACH AND INTESTINES OF THE HORSE AND OTHER ANIMALS.

By Professor Brown, M.R.C.V.S.,

Late of the Royal Agricultural College, Cirencester.

(*Continued from vol.* xxxv, *p.* 764.)

Subacute Diarrhœa.

Under this division we may include the most common forms of the disease among cattle and sheep.

The absence of any inflammatory symptoms, the continuance of the affection for a considerable period without the occurrence of any decided organic changes, its frequent and spontaneous cure, and its general tractability under prompt treatment, are characters which distinguish the subacute form. It will be understood that many circumstances may arise to render subacute diarrhœa unusually serious in its results; among them previous debility, inclement weather, defective quantity or quality of food, and, in addition, extreme youth, may be estimated singly, or in continuation, as conditions which tend to a great mortality among the affected animals; but under favorable circumstances the attack is often transient, and usually yields to comparatively simple treatment.

A consideration of the disease in its most benign aspect will present us with numerous instances arising from a vitiated stated of secretions; or from the consumption of irritating or innutritious food in small quantities: in such cases the

diarrhœa is often curative in its results, when the cause has ceased to operate any further.

In the event of the cause or causes being permitted to continue their influence the disease assumes a more serious character; the debility of which we have before spoken soon appears, irregular appetite follows, and a rapidly increasing emaciation proceeding to complete prostration, is the consequence of the impaired nutrition.

Diarrhœa of the simple kind is frequent among cattle and sheep when feeding upon succulent diet. Sheep especially suffer when pastured upon clover that has grown luxuriantly and rapidly under the stimulus of the manure from a recent pasturage upon the same ground; the young plant so forced to a premature development possesses in a particular degree those peculiar properties which render such kinds of herbage innutritious and deleterious. Allowing the animals to continue in such feeding grounds necessitates an extension of the disease which might at the commencement have been cured by removal of the affected subjects to a better or older pasture; but often the true cause is not suspected, and the animals are consequently permitted to remain under their influence until loss to some extent is incurred.

Diarrhœa of the unfavorable type may, as we have seen, originate in any of the simple alterations of general circumstances to which all animals are subject, but certain fixed conditions are sometimes concerned in its constant prevalence. Some lands upon the poor, undrained, lias clays have obtained an unenviable reputation in this particular, being known as "tart" and "scouring" lands, the researches of Dr. Voelcker have elicited some interesting and important particulars, that have been already quoted in the *Veterinarian* in reference to the "scouring lands" of central Somerset.

Taking a general view of the causes of subacute diarrhœa, we shall find them arrange themselves under the head of moisture and mineral matters in excess. Moisture in excess, whether occasional and merely dependent upon peculiarity of season, or permanent, as in the case of undrained and retentive soils, stands first; its influence in the production of a luxuriant and imperfectly developed herbage has been frequently remarked upon, while the occurrence of diarrhœa in wet seasons, and in undrained clay lands, is a fact well known to practical men. Next, we may, according to Dr. Voelcker, consider the quantity of mineral matter in the plants or the water of the locality as a point of some considerable importance; even in the hay from "scouring lands" the Doctor finds a remarkable excess of salts. The direct action of mineral

waters must not be estimated ccording to the quantity of a particular purgative salt, as sulphate of magnesia, present; but rather according to the result observed to follow the exhibition of the fluid containing those salts; as it is remarked in the case of well-known purgative mineral waters that the actual quantity of the purging salt is quite inadequate to the production of catharsis; but there appears to be something in the combination of a number of saline agents that leads to a medicinal action, which is not the mean of the known action of the several agents combined: the law which determines this effect is not understood; but we have in some measure an exemplification in the combination of aloes and sulphate of iron, or aloes and gentian. In both cases the purgative action, instead of being moderated by the tonic, is markedly increased, and consequently the result is not the mean of the known action of the agents combined. The injurious effects of these causes depend agood deal upon their constancy; the animal, suffering from their primary effects, is still compelled to exist under the most unfavorable circumstances; the disease consequently progresses unchecked, and a fatal prostration is soon established from the incessant drain upon the fluids of the system and the interruption to the digestive function, preventing the supply of new material being at all adequate to the amount of loss sustained.

Treatment will be regulated by the nature and extent of the causes, as well as by the stage of the disease. The most simple form of diarrhœa, dependent upon some irritating matter consumed in the food, will probably require little interference after the cause has been discovered and removed. The sudden arrestation of the purging will not be at all advisable, as the removal of the offending matter will be thereby prevented; a mild purgative may even be employed at the outset, but, remembering the irritable condition of the mucous membrane, the practice is not free from danger. Diet composed exclusively of liquid aliment of the blandest and most soluble description will be strictly enjoined, to the exclusion of the usual provender. Oats and bran should on no account be given, and hay only in small quantities and of good age and quality.

Alkaline agents may be exhibited with advantage without any fear of a premature cessation of the diarrhœa, which will nevertheless subside after the offending matters have been removed and the acid secretions corrected. Such agents as bicarbonate of potash, solution of the acetate of ammonia, and prepared chalk, are all effective in simple cases. The acetate of ammonia should never be omitted, as its effects

upon the blood are most beneficial, preventing in a great degree that viscidity which is to be apprehended as the result of profuse evacuations.

Certain modifications of this plan of treatment will be necessary under various circumstances, and the discrimination of the practitioner will be called into requisition to determine when astringents and tonics are no longer to be delayed with afety. Extreme debility may necessitate the immediate employment of medicines to arrest the diarrhœa as quickly as possible, while a gradual loss of condition will indicate the propriety of combining tonics with the aliment which the patient receives. Pain, when present, will call for the use of anodynes and sedatives; as a rule, however, no marked uneasiness is shown, except in the acute form of the disease.

When diarrhœa is the consequence of causes constantly acting, whether they refer to the moist and poor conditon of the pasture, or the excess of mineral matter, or both combined, medical treatment of individual cases will be subordinated to the greater question of the removal or amelioration of the unfavorable conditions of the locality. It would be obviously futile to attempt to remedy the malady so long as the causes of it continue in full activity, although the employment of the usual remedies will be had recourse to with every chance of success after the patients have been removed to a more healthy situation pending the cure.

The treatment of the soil belongs to the agriculturist, whose course is fortunately well defined in these cases. Efficient drainage will generally be the basis of his operations, the abandonment, if necessary, of water highly charged with mineral constituents, and the use of the plough, when practicable, upon all those lands whose condition is nots ufficiently improved by drainage.

(*To be continued.*)

OBSERVATIONS ON "SOUNDNESS."

By R. H. Dyer, M.R.C.V.S., Waterford.

(*Continued from p.* 8.)

Having described in my former paper that which I conceive to be the proper method of examining a horse as to soundness, I will endeavour to follow out the plan laid down, so as to elucidate the subject as fully as my pro

fessional abilities will admit of. I shall not attempt to follow in the wake of those who have preceded me in treating of the subject, but will strike out a path of my own, which will, I hope, render these observations acceptable to those members of the profession whose practice does not lead them into this branch of veterinary science to any great extent. I believe, indeed I know, there are scores of men in the veterinary profession who are engaged principally in a country practice, and who cannot, of necessity, be expected to devote as much of their time to this subject as others of their professional brethren residing in towns.

The course I propose to pursue in elucidating the subject is in accordance with the system carried out in my practical examinations. It must, however, be distinctly understood that my observations refer more particularly to *undisputed* cases. It may perhaps be necessary, in order to make them more intelligible and complete, if that part of our duties, viz., *post-mortem* examinations, are occasionally made matter of comment; but as I am not often called upon to investigate cases of this nature, it will not be expected that I shall dwell long upon them. Happily, in this country, but few such instances fall under notice, which fact alone speaks volumes in favour of the system I have so long advocated.

The head being the part, in our examinations, to which attention is first directed, I shall proceed to speak of the state of the *mouth*.

There are several reasons why we should carefully scrutinise this cavity. In the first place, it is desirous to know the age of the animal. In this, however, we are occasionally puzzled, as some horses are so "forward in their mouths" at the end of the year that they appear older than they really are. Thus, a three-year-old will have indications of being four; a four-year-old five, and so on. One side of the mouth, also, will often be in advance of the other side. Some yearling ponies will present appearances of having a full mouth of *permanent* teeth. This, however, has only reference to the female sex. Again, some old horses will have their teeth so evenly worn and perfect, that one of four-and-twenty years old may pass muster for a six-year-old with the inexperienced. All this, and even more, will be often witnessed in natural cases, so that it is necessary for the examiner of horses as to soundness to make himself fully acquainted with all variations which are likely to occur. And when it is known that *art* occasionally steps in to assist dentition, it becomes still more necessary that we fully understand what she is capable of effecting.

I am sure I need scarcely remark that those who are designated *tinkers*, copers, or screw-dealers, are ever ready to tell their customers that such and such a horse is "*six off.*" This is true—he is six *off* certainly.

Having satisfied ourselves of the age of the animal, we next direct our attention to the *formation* of the mouth, and observe whether the incisors are evenly worn and unbroken. By this we can form an idea as to whether the animal is a crib-biter or wind-sucker. Some horses are so uneasy to clean that they lay hold of hard substances with their teeth during this sanitary process, by which these organs become worn and broken at their edges. This state of the teeth is found more frequently in aged horses than in young ones. If the teeth are unevenly worn it will be requisite to place the horse in such a position that he may crib if he desires it, but before this is done the examination of the mouth should be concluded. The molars ought to be thoroughly examined, in order to learn if they have grown properly and are free from disease. Many mistakes have been made from time to time with reference to carious molar teeth.

There are several diseases of the mouth; for example, paralysis of the lower lip may exist, or the horse may have a parrot mouth, or be suffering from "lampas." I have also seen animals with only half a tongue. Either of these affections would, without doubt, constitute unsoundness in a *legal* sense.

Having found the animal under inspection to be a crib-biter, what now becomes our duty? This is a knotty question, and requires a full investigation. What is a crib-biter, and does it constitute unsoundness? Blaine says, "This peculiar action is very generally, but, in my opinion, erroneously, supposed to arise from a small quantity of air drawn *into* the stomach, and is hence called sucking the wind. . . . . It consists in the simple eructation or forcing *out* of a small quantity of gas, let loose from morbid combinations within the stomach, which, as it proves a source of irritation, to aid its expulsion the horse applies his teeth to a fixed point, by which he gains the help of some of the muscles of the fauces to open and straighten the œsophagus, while, at the same time, by means of the abdominal muscles, he presses on the stomach, and forces *out* a little of the irritating air. . . . . It is considered a vice, a habit acquired, &c.; but I believe it always commences in dyspepsia, the consequences of long living on dry food, &c." Again, he says, "Crib-biters seldom carry much flesh."

Youatt writes, "It is the *inhalation* of air." Here is at

once a difference of opinion—nay, the very opposite. He goes on to say, "the crib-biting horse is notoriously more subject to colic than other horses." A case was tried before Lord Tenterden, and thus decided:—"A horse with crib-biting is unsound."

In vol. i of the *Veterinary Record*, p. 263, the President of the Veterinary Medical Association, whom I believe to have been Professor Spooner, says, "I now proceed to notice another peculiarity which the case presents (it was one of obstruction at the base of the cæcum, caused by a large carcinomatous growth), and which is worthy of even more than a passing remark. The horse was a crib-biter. I have opened (he continues to say) the bodies of hundreds of horses which during life manifested this habit, but I never met with a case that did not show some lesion in some part of the alimentary canal, and this has generally been in the stomach. My respected colleague, Mr. Sewell, is, I believe, of opinion that crib-biting always arises from ulceration of the stomach. I am rather inclined to regard it as arising from functional derangement of the digestive organs in the first instance, proceeding to structural disease as the habit becomes more confirmed.

"In this case the stomach presented an unhealthy appearance, and its parietes were irregularly developed, being more dense in some parts than in others. The œsophagus, likewise, was dilated in places; and where dilated, much attenuated in its coats. This atrophy of the œsophagus is the cause which renders crib-biters so liable to be choked, from the food becoming lodged there. And since crib-biting is thus found to be associated with disease, and, moreover, exposes the animal addicted to it to danger, I cannot view it otherwise than unsoundness."

Mr. Percivall writes, in his 'Hippopathology,' vol. ii, p. 198, "In the stable tympany is of rare occurrence, unless it be in crib-biters, who are suffered to pass their time in sucking in air." This author seems especially quiet upon the subject. Mayhew, in writing upon it, says, "In submission to general opinion, it has been alluded to as a habit learnt within the stable. The air is much more than inhaled. A large quantity is swallowed with the saliva. No slight amount is deglutated with the masticated food."

In the *Veterinarian* for 1853, p. 443, we quote as follows:—"Considerations on Crib-biting, with Eructation. By M. E. Fischer.—Although the abnormal action with horses known under the appellation of crib-biting is so often observed, it is still one far from being sufficiently understood.

"Many of our best veterinary authors have furnished dis-

sertations on the subject, but these present a great variety of opinion touching the causes, seat, nature, and consequences of crib-biting. Whilst one contends that, in the act, the horse swallows atmospheric air, another pretends that the animal ejects air, which act is accompanied with a particular noise, created by gas generated in the stomach. Some say the habit is injurious to horses who practise it, and that it frequently renders them valueless; while others maintain that it nowise materially hurts them. The court (of appeal) has pronounced in favour of its innocuousness."

The writer goes on to say what others have said before, viz., that crib-biting is not a disease of itself; he is of opinion that it should be regarded as a vicious habit rather than a disease.

Oliphant, in speaking of this habit, says, "Crib-biting being an unnatural sucking in of the air, must be, to a certain degree, injurious to digestion, must dispose to colic, and so interfere with the strength and usefulness and health of the horse. Some crib-biters are good goers, but they probably would have possessed more endurance had they not acquired this habit; and it is a fact well established that as soon as a horse begins to be a crib-biter he, in more than nine cases out of ten, begins to lose condition. He is not to the experienced eye the horse he was before. The wear of the front teeth, and even the frequent breaking of them, makes a horse old before his time, and sometimes renders it difficult, or almost impossible, for him to graze.

"Crib-biting which has not yet produced disease or alteration of structure is *not* an *unsoundness,* but is a *vice* under a warranty that a horse is 'sound and free from vice.'

"Thus, where an action was brought on the warranty of a horse which had been sold for ninety guineas, the question was, whether crib-biting, which was the *vice* in question, was such a species of *unsoundness* as to sustain the action. The horse had been warranted sound generally. Some eminent veterinary surgeons were called as witnesses, who stated that the habit of crib-biting originated in indigestion; that a horse, by this habit, wasted the saliva which was necessary to digest his food, and that the consequence was a gradual emaciation. They said that they did *not* consider crib-biting to be an *unsoundness,* but that it might lead to *unsoundness*; that it was sometimes an indication of incipient disease, and sometimes produced *unsoundness* where it existed in any degree. Upon this Mr. Justice Burroughs said, 'This horse was only proved to be an incipient crib-biter. I am clear that it is not included in a general warranty;' and the plaintiff was accordingly nonsuited.

"In a later case a horse was bought warranted 'sound and free from vice,' and an action was brought against the vendor on the ground of its being a crib-biter and *wind-sucker*. Veterinary surgeons were examined, who said that the habit of crib-biting was injurious to horses; that the air sucked into the stomach of the animal distended it, and impaired the powers of digestion, occasionally to such an extent as greatly to diminish the value of the horse and render it incapable of work. Some of the witnesses gave it as their opinion that *crib-biting* was an *unsoundness;* it was not, however, shown that in the present instance the habit of crib-biting had brought on any disease, or had, as yet, interfered with the power or usefulness of the horse.

"Mr. Baron Parke told the jury that to constitute *unsoundness* there must either be some alteration in the structure of the animal, whereby it is rendered less able to perform its work, or else there must be some disease. Here neither of those facts had been shown. If, however, the jury thought that at the time of the warranty the horse had contracted the habit of *crib-biting*, he thought that was a *vice*, and that the plaintiff would be entitled to a verdict on that head. The habit complained of might not, indeed, like some others (for instance, that of kicking), show *vice* in the temper of the animal, but it was proved to be a habit decidedly injurious to its health, and tending to impair its usefulness, and came, therefore, in his lordship's opinion, within the meaning of the term *vice*, as used on such occasions as the present."

As I have quoted somewhat at length, it will be as well now to analyse the various opinions which have been recorded, so that we may come to a correct conclusion upon this disputed point. Blaine is of opinion it is a *vice*, but he believes *it always commences in dyspepsia*. If it always commences in dyspepsia, it should not, I think, be called a *vice*. There seems much inconsistency, to say the least, in this reasoning.

Youatt is in favour of its being considered an unsoundness. He writes, "The crib-biting horse is notoriously more subject to colic than other horses."

Professor Spooner, in his remarks at the meeting of the members of the Veterinary Medical Association, gives his opinion without prevarication or mental reservation; his words, as reported, are, "I cannot view it otherwise than unsoundness."

The French writer, M. G. Fischer, considers the habit one of vice only. Lastly, we come to a legal work, by "Oliphant," in which we learn that Mr. Justice Burroughs considered crib-biting to be a *vice*. Mr. Baron Parke was of opinion, in

the case tried before him, that it was a vice. This is perplexing. I do not know how veterinary surgeons are to be expected to give opinions in a court of law upon crib-biting with all this before their eyes without subjecting themselves to ridicule. In every instance it has been shown—or, at least, the authors have stated their belief—that crib-biting *begins in dyspepsia*, and that it is likely to go on to produce structural derangement of parts within the alimentary canal. It may naturally be asked, when are we to make up our minds as to the actual moment structural derangement commences? What symptoms are present in a crib-biting horse to lead to the inference that a lesion of any portion of the alimentary canal has taken place? Until veterinary surgeons can direct one's attention to some particular appearance of an animal addicted to this habit, I think it is presuming too much to say this or that crib-biter is a *sound* animal, without running a risk of being censured by one party. We all know many horses to have been crib-biters all their lives, or nearly so, and which have fed, worked, and looked well. This, however, is no proof that they are not diseased. I dare say hundreds of veterinary surgeons can point to as many thousands of horses whose constitutions are at fault, in some way or other; still they do their work satisfactorily. This does not prove that they are not unhealthy. I knew a horse whose neck-strap was always carried upon the harness-collar during his work—a distance of twelve miles out and the same number of miles in—every day; yet this animal was an extremely good one as a poster.

I have made no remarks in particular with reference to "wind-sucking." These two habits are, in my opinion, so closely allied to each other, as regards both being produced by indigestion, that there is no necessity for it. The same remarks are applicable to the "wind-sucking" as to the crib-biting horse. I may, however, *en passant*, just advert to one circumstance which corroborates the observations of Professor Spooner, that in all cases of death from disease, when the subject of it happened to be a crib-biter, and the patient has died somewhat speedily, I have observed the coats of the stomach to have an unhealthy appearance. I have the case of a crib-biter at this moment; I have often watched him, and sometimes for hours he seems to be free from the habit, while at another time he is particularly engaged in the act; but as it does not seem to interfere with his work, no notice is taken of it, the owner not wishing to have an anti-crib-biting collar employed.

I think the subject may be disposed of in a few words. In the first place, nature never intended a horse to crib.

Secondly, it is universally believed that the habit arises from indigestion. *Thirdly*, that if continued, structural alteration of parts will take place; and, *fourthly*, it is shown that such horses are more liable to colic than others. It does not, therefore, follow that because an animal looks well, feeds well, and does his work well, that his inward parts are not diseased. If we turn to the human subject, we find numberless instances of men whom we know to have diseased structures; still they do their ordinary business, but certainly not with the same degree of *comfort* to themselves as if they were free from disease. It does not prove, then, that diseased structure does not exist because we are not in a position to demonstrate it. A crib-biting horse is, to all intents and purposes, an unsound one. He would be denominated *usefully* sound.

(*To be continued.*)

A CASE OF HYDATID IN THE LATERAL VENTRICLE OF THE BRAIN OF A HORSE, OCCURRING IN THE PRACTICE OF MR. WOODGER, M.R.C.V.S., PADDINGTON.

Communicated by Professor Varnell.

The particulars of this unusual and very interesting case were furnished me by Mr. A. Woodger, M.R.C.V.S., Paddington. The novelty of the occurrence induced me to lay the case before the members of "The Veterinary Medical Association," together with the brain, which Mr. Woodger had taken from the horse the subject of these remarks.

It appears that the animal was the property of the "London General Omnibus Company," in whose service he was used as long as it was found practicable to do on account of his peculiar comportment when at work. Mr. Woodger informed me that originally the attention of one of the superintendents of the company was directed to the animal on account of his not performing his work as he ought to do. In the stable, however, nothing whatever could be detected as being wrong with him; he ate and drank well, and his secretions and excretions were natural. When at work his place was on the "off side," but instead of going forward as he should do he continually bore away from the pole, and sometimes to such an extent that the driver had very great difficulty in avoiding coming in contact with other vehicles. As an experiment, he was placed on the near side, when it

was found that he still as forcibly leaned towards the off side, bearing so heavily against the pole that it was with great difficulty he was made to complete his journey. As before stated, after being unharnessed and placed in the stable, nothing appeared to be wrong with him, and, consequently, it was thought by the attendants that it was unwillingness and not inability to perform his work that induced him thus to act. It was nevertheless observed that there was a peculiarity in his expression which was unusual.

Early in the month of August last Mr. Woodger was called to see the horse, when the first symptom that attracted his attention was a constant disposition to swerve to the right, and while turning in this direction he would firmly press against anything that might happen to be in his way. He would also frequently walk round his box, always turning to the right side. Full doses of cathartic medicine were given, which, however, had the effect only of temporarily mitigating the symptoms. Setons and other counter-irritants were likewise applied over the region of the poll, but no benefit resulted from their use.

In consequence of this, the horse was now turned into a meadow, when, although he improved very much in condition, his incapability for doing any work became more and more evident. He was again taken into the stable and most carefully examined, but no satisfactory evidence of disease to account for the symptoms could be detected. He gradually became unconscious of surrounding objects, and shortly afterwards died.

The upper surface of one hemisphere of the cerebrum had been removed previous to Mr. Woodger bringing the brain to the College, by which means the cause of the cerebral disturbance was brought to light.

It appears that Mr. Woodger, junior, had partially examined the brain in this stage of the dissection, and had expressed his opinion that the ventricle contained a hydatid, which, upon more complete investigation, proved to be correct. With a view to further determine the true character of this cyst, I proceeded to remove it from its situation, which was easily effected. It was found to be enclosed in a membrane, which at one point was continuous with the plexus choroides, but at no other part was it in any way attached. This membrane being removed, the acephalocyst (for to this variety of hydatids I believe the entozoon to belong) was found to have no attachment to it. It was as large as a moderate-sized orange, and the pressure it had imparted to

the walls of the ventricle had caused considerable absorption. The *septum lucidum* had entirely disappeared.

This is the first instance I have met with of a hydatid in the ventricle of the brain of the horse, and I am inclined to think that such occurrences are very rare. We are, therefore, the more indebted to Mr. Woodger for the trouble he has taken in bringing the case under the notice of the profession.

The records of veterinary medicine contain numerous cases of hydatids in the brain of the sheep, and in the April number of the *Proceedings of the Veterinary Medical Association*, 1839, one is recorded by Mr. Battledore, veterinary surgeon, of a hydatid being found in the *lateral ventricle* of the brain of this animal, which produced unconsciousness and a constant disposition to turn to one side. Hydatids on the surface or in the substance of the brain of the sheep are common enough, but in the *ventricles* of the organ such entozoa are, I believe, very uncommon.

[At page 396 of our Journal for 1855 a case is recorded by Mr. Morgan, of Dalston, which he has described as one of hydatid of the brain of the horse. Subsequently to the publication of the case we had an opportunity of examining the specimen, and found it to be a mere membranous cyst, containing a good deal of cholesterin in a state of crystallisation.]

CHRONIC DISEASE OF THE BONES OF THE CRANIUM OF A HORSE, ASSOCIATED WITH THE EXISTENCE OF HYDATIDS WITHIN A CYST AT THE INFERIOR PART OF THE ORBIT.

By James Kirkman, M.R.C.V.S., Accrington, Lancashire.

I have forwarded per rail the brain, &c., of a horse, and also a small bottle containing some globular-shaped bodies, such as I have never seen before. I shall be glad if you would examine them and let me have your opinion of their nature.

The subject of the disease was a bay cart-horse, eighteen years old, the property of John Hall, Esq., of Haslingden. In December, 1861, I attended this horse for influenza, from which he then seemed to perfectly recover, and worked on until July 14th, 1862. At this time the owner requested

me to see him again, in consequence of his having a discharge from the off nostril. The Schneiderian membrane was of a lead colour, and the submaxillary gland enlarged and hard. The groom stated that the discharge had been perceived for some two or three months, but did not seem to affect the animal's health. Now, however, he was off his feed, and he thought that the discharge was increased in quantity.

I applied a little Ung. Hydrarg. to the gland daily, and syringed the nostril with a weak solution of chloride of zinc. I also gave Ferri Sulph. in drachm-doses twice a day. From this treatment he appeared to improve, his appetite becoming better, and the discharge lessening in quantity. Sometimes, indeed, there would be scarcely any for several days together. He was again put to work, and continued at it until October 22nd, when I was called to see him, as he had completely given over eating. He would get a little hay into his mouth and there hold it, and after a time put it out again. The pulse was weak, but not quicker than natural. The coat was staring, and the extremities and surface of the body cold. I now thought that some of the sinuses of the head had become charged with matter. I first gave him a gentle laxative, and followed it up with Ferri Iodid., a drachm twice a day in ball. I also ordered his appetite to be tempted with any kind of diet. I saw him again in a few days, but did not perceive any change in his condition. On giving him the medicine, however, I observed an enlargement in the hollow just above the eye, and from the examination I made I concluded that an abscess was forming in this situation. I thrust a fine lancet into the enlargement, but did not give exit to any pus.

On my calling again the next day, the groom informed me that the horse's eye was continually covered over with fluid, and that he could not keep it free. I examined the eye, and found the lids nearly matted together with an adhesive fluid. I merely ordered him to do his best to keep the part clean by bathing it with cold water.

As no improvement took place, the owner determined to have the animal destroyed, which was done yesterday.

On making a *post-mortem* examination of the head I found the temporal muscle of the right side flabby and light in colour. On removing the lower jaw an abscess was brought to light, as being situated underneath the eye and posterior to the maxillary tuberosity. Strange to say, the abscess not only contained pus, but a large number of globular-shaped cysts, some of which I send. There was scarcely less than a handful of them. On removing the brain I found that a portion of the base

of the cranium was raised up, which, as you will see, has led to absorption of a portion of brain.

If you think this case worthy of inserting in the *Veterinarian*, you would greatly oblige me by forwarding it for publication, together with any remarks you may be pleased to make upon it.

To Professor VARNELL.

REMARKS ON THE ABOVE CASE BY PROFESSOR VARNELL.

The parts sent for my investigation consisted of a portion of the cranium and the brain. I first examined the former, which I was induced to do from the statement made in Mr. Kirkman's report, that a part of the osseous wall had undergone considerable structural alteration. Not only did I find this to be really the case, but that portions of the temporal and pterygoid muscles, and those of the eye also, were much degenerated. These muscles were pale and flabby, but had a quantity of adventitious tissue connected with them, which, with the thickened state of the pericranium, produced a considerable enlargement externally, the surface of which suggested the idea of its having formed a part of a cyst. Imbedded in the loose tissue and the muscles alluded to, I found several small, vesicular bodies, identical with those sent by Mr. Kirkman, to which I shall again allude. I next examined the inner surface of the cranium, the left anterior half of the floor of which, from as far back as the posterior part of the sella turcica, and as far forward as the olfactory fossa, was considerably thickened by osseous deposition. The enlargement thus produced inwardly must have caused great pressure upon the anterior half of the left hemisphere of the *cerebrum*, involving not only the base of this part of the brain, but also the following nerves, namely, the first, second, third, fifth, and sixth.

The pressure of this abnormal growth upon the brain had caused a corresponding depression in the base of the organ, and the nerves above mentioned must, in their course out of the cranium, have been also considerably pressed upon, and had their functions, no doubt, materially interfered with.

The symptoms described by Mr. Kirkman doubtless depended upon the pressure imparted to the brain and nerves by the encroachments of the osseous growth within the cranium.

It may be asked, what was the cause which gradually produced this enlargement within the cranium? This question is answered by examining the vesicular bodies sent with the other parts, which, we learn, were only a portion of a very

large quantity — more than a handful — contained in a cyst at the bottom of the orbit. These proved to be hydatids, and, I believe, of the variety designated *Hydatis endogena*. The entozoa varied in size from that of a pea to a small marble, but how they, or the ova from which they were produced, found their way to the locality in which they were found I shall not venture an opinion upon.

The case is unusually interesting; I have never seen or read of one similar to it. Others, however, may have done so; but they have not, that I am aware, recorded the fact. I hope that the members of the profession will continue to contribute cases of interest which may come under their notice, for if they will only do this such an amount of information will be accumulated which cannot prove otherwise than a valuable addition to veterinary literature.

CASE OF TUMOUR IN THE BRAIN OF A HORSE.

By W. P. Toll, M.R.C.V.S., Lichfield.

I little thought, when sending the report of a case of tumour in the brain of a horse in October last, that it would so soon fall to my lot to transmit you another so much like it as the present, both in symptoms and morbid appearances.

The subject of this report was a bay carriage-mare, thirteen years old, in good condition, the property of a market gardener in this place, which he used chiefly for the purpose of working his land and taking the produce to market.

September 30th, 8 p.m.—The mare was reported to me as being attacked with colic soon after she returned from her work. On arriving at the stable I found her rather uneasy, stamping and scraping the ground with her fore feet, and occasionally turning round in the box; she did not, however, lie down. The pulse was soft and regular, and about forty in the minute. The extremities were warm, but nothing had been seen to have passed from the bowels all the afternoon.

Considering the pain to arise from indigestion, I gave the following draught:

℞ Spt. Ether. Nit.,
Tr. Opii, āā ʒj;
Sol. Aloës Bbds. opt., ʒvj.

Two hours afterwards, the mare being very restless, a ball was given, composed of—

Hyd. Chlorid., ʒss;
Pulv. Opii, ʒj;
Massa com., q. s.

October 1st, 6 a.m.—The mare is very restless at intervals, turning round in the box, and occasionally resting her head in the manger or against the wall. The pulse and breathing are quiet. No action, however, of the bowels has taken place. She will take a little bran mash and warm water. Gave—

Spt. Æther. Nit.,
Tr. Opii, āā ʒj;
Sol. Aloës Bbds. opt., ʒij, in draught.

Some hardened fæces were removed from the rectum, and an enema thrown up.

5 p.m.—Patient more quiet. Takes mashes and warm water pretty freely. No action of the bowels. A small quantity of hardened fæces were again removed, and another enema thrown up. Ordered the enema to be repeated during the night.

2nd, 8 a.m. Patient better, bowels acting, but not too freely. From this time she required little beyond ordinary care and nursing, and as such she was enabled to resume her work in a few days. She continued to do her work pretty well up to Saturday night, December 6th.

December 7th, 5 p.m.—I was again called to see the mare, as she had been very unwell all day, and had refused all food and water. She was again giving indications of pain by walking round the box, or occasionally standing with her head in the corner, stamping and scraping with her fore feet. The pulse was 45, soft in character, and regular in action. The breathing was tolerably quiet, and the body and extremities were of a natural temperature. Gave—

Spt. Æther. Nit.,
Tr. Opii, āā ʒj;
Sol. Aloës Bbds. opt., ʒj, in draught.

10 p.m.—No better. Gave—

Hyd. Chlorid., ʒss;
Pulv. Opii, ʒj;
Massa com., q. s., in ball.

A few hardened fæces were removed from the rectum, and a glyster thrown up, which, as on the former occasion, was ordered to be repeated during the night.

8th, 7 a.m.—Very little change. Pulse 45, soft and

regular. Body and extremities warm. Refuses to take either food or water. The pain at intervals is more violent, leading to her turning sharply round the box, or pressing the head against the wall, stamping and scraping with her fore feet, or trying to put them in the manger. At times she appears very dull and stupid, and is with difficulty made to move, even if touched with the whip. No fæces can be felt in the rectum.

Repeated the enemas.

As the symptoms were so much like those of the case reported by me in the *Veterinarian* for November, my impression was that I had a similar one to contend with, and not an ordinary one of indigestion, as I had at first supposed. I told my employer what my apprehensions were, and what we might reasonably expect would be the result.

6 p.m.—Much the same as in the morning. No action of the bowels. I ordered Ol. Lini Oj to be given, and the glysters to be repeated.

9th, 8 a.m.—Not so well. The pains return at shorter intervals, and are more violent. The pulse is slightly increased, but still regular. The bowels are not acting, but a little feculent matter follows the use of the enemas.

12 a.m.—The mare has had two or three very violent paroxysms of pain since the morning. She even tore up the pavement with her feet. Her body was bedewed with profuse perspiration. At times, however, she would press firmly against the wall with her head, and appear very stupid; so much so indeed, that it was with great difficulty she could be made to move.

5 p.m.—Pains not so violent, and the intervals between the paroxysms of longer duration. Breathing tranquil; perspiration subsided; pulse 48 in the minute, soft and regular. Head still pressing against the wall. She would not move when spoken to. Nothing has passed the bowels.

Gave Ol. Lini Oj, and repeated the enema. About ten o'clock p.m. violent exacerbations of suffering returned, which continued until 1 a.m., when she fell down and died almost immediately.

10th.—This morning I made a *post-mortem* examination, and found the thoracic and abdominal viscera quite healthy. Indeed, no traces of disease in either of the large cavities of the body were met with. The bowels contained a large quantity of feculent matter, which was in a pultaceous state. The single colon had indeed been completely emptied by the repeated use of enemas.

I proceeded to open the head, but not being prepared with

suitable instruments, I had to make the best use I could of an old saw and an axe. In making the upper transverse section of the skull, I unfortunately cut through the membranes of the brain, when about two drachms of a dark, chocolate-coloured fluid escaped. On removing the detached piece of bone the tumour presented itself, lying in the same situation as the one did which I sent up in October; but on detaching the head at the occiput there was nothing to indicate anything wrong with the posterior part of the brain as in that case.

At first I did not think of forwarding the specimen to you, but afterwards I determined to do so, believing it would be interesting; more especially as it could be compared with the other.

I have since learned that nothing very unusual was noticed about the mare before the 30th of September. That subsequently to that date she appeared dull, and had on one or two occasions stopped in her work as if stupified. In a few minutes these indications of ill health would go off, when she would resume her labour. No further notice was taken of her, as she did her work and improved in condition up to the time of visit.

I should further observe that no paralysis was present in this case, and that the mare invariably turned on the near side.

To Professor VARNELL.

REMARKS ON THE ABOVE CASE BY PROFESSOR VARNELL.

Individually I am much obliged to Mr. Toll for sending me a second very interesting case of disease of the brain of a mare, which lately occurred in his practice. It is somewhat remarkable that the character of the disease in this case should so nearly resemble that of one which I received from him a short time since, which will be found to be recorded in the November number of the *Veterinarian* for 1862, with some observations that I made upon it.

I think it important that the present case should also be recorded, as, in conjunction with the other, they will afford more matter for reflection, both in a pathological and a physiological point of view, than either of them could possibly do by itself.

On comparing the symptoms of this case as described by Mr. Toll in his report with those of the former one, it will be observed that there is a great similarity between them. The most prominent symptoms in the present instance were, a torpid state of the bowels, extreme stupor, and a disposition to turn round in the box. This turning, however,

was only to the left side—the one on which the brain was found to be affected. In addition to these symptoms, the animal gave indications of acute pain at intervals, and frequently pressed her head against the wall, apparently unconscious of surrounding objects. It appears, however, that her pulse did at no time rise so high as in the former case.

On this occasion the left hemisphere of the cerebrum only was sent for my inspection, but the structural alterations it had undergone, and upon which the symptoms and death of the mare evidently depended, so nearly resembled those observed in the same part of the brain of the former case, as to preclude the necessity of describing them in detail. The cause also which produced the lesions was the same as in the former instance, consisting essentially of the existence of a tumour about the size of a small hen's egg, which had imbedded itself in the upper part of the posterior lobe of the left hemisphere of the cerebrum. For a description of the structural changes of the brain that had taken place in the former case, see page 712, vol. xxxv, of the *Veterinarian* for November, 1862. My reason for referring to these lesions is, that the description I have given of them strictly applies to those in the present case.

The tumour, however, although of the same character, was evidently not developed precisely in the same manner. In describing the former case, I had no hesitation in stating that it arose from a bulging out, in a forward direction, of the anterior wall of the left lateral sinus, thus forming a sac, which was particularly evidenced by its smooth lining membrane being continuous with that of the right lateral, and also the superior longitudinal sinuses. The tumour in the present case, however, as far as I am able to determine, was only indirectly connected with the sinuses of the dura mater. Its inner surface is quite smooth and glistening, having all the character of a serous membrane; and I have no doubt was continuous with the inner coats of the veins. The tumour contained a large coagulum of blood, a part of which, judging from its condition, must have been in this situation for a long time. I am inclined to consider that the formation of the tumour was due to a varicose condition of one of the superficial veins of the cerebrum, near to its junction with the posterior extremity of the longitudinal sinus. In the former case the coat of the sac was thick and dense, but in the present one it was thin. It is interesting to observe that in neither of these cases was there any evidence of loss of motive power, although in both the animals were unconscious.

TUMOURS WITHIN THE LATERAL VENTRICLES OF THE BRAIN OF A HORSE.

By J. B. Henderson, M.R.C.V.S., London.

On Sunday night, November 9th, 1862, I was called upon, at 12 p.m., to attend a bay carriage-gelding, the property of the Earl of L—.

I was informed by the coachman that the horse had arrived from the north the day before, having been on the railway about fourteen hours, and that when taken out of the box he seemed more lively than usual. He appeared to be as well as he ever had been up to about 6 p.m. on Sunday, when he was observed to breathe quicker than usual, and to be a little restless. A warm mash was given, and he was made as comfortable as possible; the coachman thinking that the journey was the cause of his indisposition. I was also given to understand that the horse was naturally a lazy animal, and a discredit to any one who had to look after him. He had likewise a peculiar propensity for hanging his head down.

On examining him I found him covered with a profuse perspiration, his breathing very much disturbed, and the pulse increased to 70 in the minute. There were likewise evident indications of abdominal pain, as he frequently kicked at his belly, and looked round to his flank.

I gave him an enema, and administered a draught, consisting principally of solution of aloes in a six-ounce dose. A mustard poultice was also applied to his belly. In about an hour afterwards he became very violent, in consequence of which I administered five drops of the tincture of aconite, and had it repeated about two hours afterwards. I left him about two o'clock, with instructions that he was to be watched all night.

The next morning I was told that he had remained pretty quiet after I left. He appeared to be somewhat better; the bowels were well open about ten o'clock; the pulse 45, and breathing normal. The head, however, was much swollen, and he seemed in a semi-comatose state nearly all the day, and indeed until Wednesday evening. At times he would rouse himself, when he would partake of a bran mash, and drink some hay-tea or chilled water. He seemed to obtain great relief from the facial veins being opened, and I had his head bathed two or three times in the day with tepid water.

Tuesday night I gave him five and a half drachms of

aloes, which kept his bowels nicely open without purging him.

Wednesday.—He remained in the same comatose condition all day until the evening, when he became very violent, thrusting his head against the wall, and sweating profusely. I administered the tincture of aconite again, and in about four hours afterwards he became tranquil, and remained so till Thursday afternoon, when his pulse rose to 70, and shortly afterwards to 100. He did not stand still for two minutes together, and every movement seemed to be perfectly independent of his will.

He died on Friday morning about 3 o'clock.

A *post-mortem* examination was made shortly afterwards, and the brain sent to the College for your inspection.

REMARKS ON THE CASE BY PROFESSOR VARNELL.

The symptoms of the preceding case, as described by Mr. Henderson, were evidently diagnostic of cerebral disease. Nevertheless, the precise character of the affection no one, I imagine, would have been bold enough to affirm, since the same train of symptoms would arise from other causes than those upon which they were found to depend. Some very interesting cases of brain affections are recorded in this, and also in the last number of the *Veterinarian*, in which the symptoms, whether arising from disease at the base of the cerebrum (see Mr. Kirkman's case), or of the upper surface of the posterior lobes of the cerebrum (see two cases by Mr. Toll, one in this and the other in the November number of this Journal), or from abnormal growths in the interior of the lateral ventricles (see an unusual case of the kind, by Mr. J. Woodger, in the present number), were very similar in many respects; there being also evidence in each instance that the disease was of very slow growth. Although, therefore, Mr. Henderson does not say that he suspected the horse to be labouring under disease of the cerebrum, nevertheless the general tenor of his remarks, and the treatment he adopted, would suggest this idea.

I will now give a brief account of the examination of the brain in question; and may first observe, that those who have had opportunities of removing this organ from the cranium, whether for the purpose of simple dissection or pathological investigation, cannot have failed to notice that, after the roof of the skull is taken away, there is a tendency for the upper surface of the cerebrum to collapse—that is, if the brain is in a normal condition—and thereby to become

slightly flattened. The same is also the case when the brain is wholly taken out of its osseous case, and placed on a plane surface. In the case in question, however, the upper surface of the cerebrum remained without any flattening taking place; a peculiarity so well marked that it did not fail to attract the attention of those present. This fact at once suggested the probability of there being something abnormal in its interior, which not only prevented the collapse taking place, but also produced persistent pressure upon the walls of the ventricles. In other respects the brain, as viewed externally, appeared to be healthy, with the exception that the vessels of the *pia mater* were unusually full of blood.

The *falx cerebri*, loose tissue, and blood-vessels, being removed from the longitudinal fissure, the upper part of each hemisphere was next sliced off on a level with the *corpus callosum*, and the lateral ventricles exposed by taking off their roof, which brought to light the cause both of the symptoms and the death of the animal. In each lateral ventricle a pear-shaped body, about two inches and a quarter in length, and of average diameter of about three quarters of an inch, was found. The ventricles also contained more than the usual quantity of fluid, which was of a deep-straw colour. On further examination of these bodies they were found to be connected with the choroid plexus, and structurally they consisted of earthy and albuminous matter, deposited in and upon the rete of blood-vessels of which the plexus is composed.

The pressure which these tumours had imparted to the surrounding walls of the ventricles had caused absorption of the brain-substance to an extent corresponding, or nearly so, with their own size. This pressure also was, without doubt, the cause of the symptoms manifested by the animal, and which, as before stated, were perfectly diagnostic of cerebral disease.

PERICARDITIS IN A COW, PRODUCED BY THE PRESENCE OF A NEEDLE IN THE PERICARDIAL SAC.

By T. D. Hulme, Veterinary Student.

I send you by to-night's train a specimen of what I consider to be a rare disease, viz., pericarditis associated with great thickness of the pericardial membrane, and effusion into the sac.

The case occurred in a milch cow, the property of my

uncle, Mr. Martin Hulme, Harriseahead, Staffordshire, about six miles from Congleton. The animal was five or six years old, and had had several calves; she was also about two months gone in pregnancy. She always appeared to be in good health up to the period of her recent ilness. She was first perceived to be unwell on October 20th, at which time they sent for a neighbouring cow-leech, and, by what I can learn, he gave her some opening medicine, as her bowels were costive. It is said that she grunted very much, and that her breathing was very quick. A good deal of tremor was also present, affecting in particular her shoulders and hind-quarters. The cow-leech told them that she had inflammation of the lungs, and that one lung was more inflamed than the other.

On the 21st she was much the same, but the bowels had not responded to the medicine. She was bled—from two to three quarts being abstracted.

After bleeding the trembling was somewhat diminished, and she did not grunt so badly.

On the 22nd the bowels responded a little to the medicine, which also seemed to afford some relief. She, however, did not partake of any food, but would drink a little gruel.

On the 23rd the abatement in the severity of the symptoms continued, and she gave rather more milk than she had done since the attack; she also showed a disposition to take a little hay. The cow-leech gave her some more opening medicine, for the bowels were still inclined to be costive.

On the 25th she became much worse, and grunted as badly as at the first. She would not take anything except gruel. More opening medicine was given.

26th.—I saw her this day for the first time, and found the following symptoms to be present:—Appetite fastidious; bowels fairly open; eye bright, and nose dewy. Horns, ears, legs, and udder cold; body warm; mouth moist, but hot. The pulse hard and full, numbering from 80 or 90 per minute. The breathing about thrice as quick as natural, each expiration being accompanied with a low grunt or moan. There was no cough, nor was there any pain evidenced on pressure over the region of the chest. Auscultation indicated that the respiratory sound was normal in each lung. I could detect no symptoms of inflammation of the lungs or pleura; but opposite to the region of the heart on the *right* side, I thought that the sound of the heart's action was louder than natural. I did not, however, attach much importance to this, ascribing it merely to the increased quickness of the pulse.

Diagnosis.—I thought the case to be one chiefly of simple fever, brought on probably by being exposed to very inclement weather the day before she was perceived to be ill.

Treatment.—To allay the febrile state of the system, P. Camphoræ et Pulv. Digitalis, āā ʒij, et Potass. Nitras, ʒij, was administered; I also left Magnes. Sulp., ʒvij, to be given late at night or early in the morning, there being still a tendency to constipation.

27th.—The animal is much the same. She refuses all food, and rumination is suspended; the pulse, however, is a few beats lower, and the grunting respiration is diminished. The febrifuge medicine was repeated, and instructions left for a second draught to be given at night.

28th.—The symptoms less urgent. The bowels are freely open. The pulse and respiration, however, are still much increased. The eye is bright and the nose dewy. The horns, ears, and extremities, are rather warmer. Repeated the medicine, and gave instructions for it to be continued until my next visit.

31st.—The animal is much the same as when last seen. The pulse is only a few beats lower; the respiration still quick, and the horns, ears, and extremities rather cold. The bowels also are very irritable; indeed, diarrhœa may be said to have set in. I thought it probable that some of these symptoms might depend on weakness or debility of the system, and as such, that would give trial to the stimulating or tonic plan of treatment. A draught, composed of sulphate of iron, ginger, carraway seeds, and powdered gentian, was given, and ordered to be repeated in the evening. I also gave instructions for her to be well dosed with new milk-gruel, mixed with eggs and a little flour, to check the purging.

November 3rd.—I found my patient much better; the secretion of milk was returning, and the body, horns, &c., were warmer. Her appetite had returned, but the pulse still numbered between 70 and 80. The breathing also was very quick. The owner thought, from this relief in the symptoms, that she would not require my services any further. So I left half a dozen tonic and stimulating draughts, to be given as before, hoping that as this plan of treatment had succeeded so well, she would in due time recover. But I did not know what could keep the pulse up so high, and thought it perhaps might be due to some chronic disease; perhaps of one of the stomachs, caused by the animal having partaken of some indigestible matters. I had auscultated each side of the chest several times, to ascertain if I

could detect anything abnormal in the condition of the lungs, but could not.

As she kept gradually improving for several days, I did not hear anything further of her until November 7th, when I was required again to see her, a relapse having taken place. There was now effusion into the cellular tissue about the dewlap, and the muscles of the right side of the chest, opposite to the heart, were perceptibly shaken at each contraction of the heart, which was very powerful and even audible. The breathing was not very quick, but the pulse was between 80 and 90. She was very weak, and had a difficulty in getting up when down. Would not eat anything, and was now reluctant at taking her gruel. The nose was also dry, the secretion of milk suspended, and the horns, &c., cold. The fæces were also of an inky-black colour, but of a natural consistence, which I ascribed to the Ferri Sulphas that had been given. Auscultation with the stethoscope over the region of the heart showed its action to be obstructed, and the gurgling of water could be plainly heard at each contraction of the organ. The owner, the day before my visit, finding that her bowels were again becoming costive, had given her half a pint of castor oil.

Diagnosis.—Inflammation of the serous lining membrane of the heart and pericardium, and effusion of fluid into the pericardial sac.

I informed the owner that I considered the case hopeless, and gave it as my opinion that no treatment would be of any avail, although she might linger on for a few days longer. He said he would let me know when she did die, so that I might examine her. I advised killing her, but he preferred to let her live as long as she would. On the 9th of November, he having sent me word that she had died the day before, I this morning made a *post-mortem* examination, when I found the liver, stomach, and intestines healthy. The gall-bladder was full of bile, from, I suppose, suspended digestion and assimilation of food. The kidneys and all the other abdominal viscera were free from disease. The heart and pericardial sac were found to be greatly diseased; the latter was much dilated, and filled with about, as near as I could judge, two gallons and a half of red-coloured serous effusion. The lungs were healthy, but looked rather dark in colour near to the heart. The anterior lobes also contained a small quantity of serous effusion. Opposite the heart, on each side the chest, the muscles and areolar tissue were darker in colour than elsewhere. There was effusion also into the cellular tissue about the sternum.

As for the pathological condition of the heart and pericardium, you will be able to judge for yourself better than I can describe it. The heart seemed nearly to fill the whole cavity of the chest; and so greatly was its sac distended with the fluid, that I could scarcely see the lungs for it. I have not dissected the specimen very clean, as I thought I would try and send it by to-night's train, and had not time; nor did I inspect it very closely, but I noticed a slight enlargement of a fibrous sort, as I thought, over one of the ventricles, and when I cut into it a little fluid came out. If you think the specimen worthy a place in the museum of the College, I should be proud to see it there; or perhaps you may deem the case of sufficient importance to be published.

[The specimen sent by Mr. Hulme was valuable, as showing the capability of an animal to long bear up against extensive disease, not only of the pericardium, but even of the heart itself. Its value, however, was considerably enhanced by its revealing the cause which had given rise to the affection.

This was found to be *the existence of a needle—commonly known as a large-sized sewing needle—within the pericardial sac;* thus adding another to the several cases which have recently appeared in our pages of metallic substances finding their way towards, or even occasionally into, the substance of the heart itself, without producing speedy death. It is more than probable that the needle had been swallowed in the animal's food, and had first penetrated the coats of the *reticulum* in the direction of the heart, and subsequently passed through the diaphragm and pericardium.

It was lying loose within the sac, and must oftentimes have travelled over its interior, being propelled from place to place by the pulsatory action of the heart. It was black in colour, as if it had long been exposed to the oxidizing action of a fluid.

The outer surface of the heart was covered with extensive deposits of lymph, as was also the inner surface of the pericardium; besides which, the substance of the latter was increased in thickness so as to be not less than three quarters of an inch thick throughout. Its capacity also was greatly increased, as can be readily understood when we reflect on the enormous amount of serous fiuid—two gallons and a half —which was given exit to by Mr. Hulme in making his *post-mortem* examination.]

THE POSITION OF THE ARMY VETERINARY SURGEONS IN INDIA.

October, 1862.

Dear Sirs,—As no notice has as yet been taken in the *Veterinarian* of the recent appointment of a Principal Veterinary Surgeon in India, I have assumed that you have received no information on the subject, or doubtless you would have referred to it as a step in the right direction. Some months ago a Government general order appeared in Bombay, authorising the appointment of a principal veterinary surgeon for that presidency, *as an experimental measure*, and nominating Staff Veterinary-Surgeon Hallen for the office. A code of rules was also published at the same time for the guidance of the whole veterinary department of Bombay.

I sincerely hope the experiment may prove a successful one, and lead to appointments of the same kind being made in the other Presidencies of India. In my humble opinion, no better selection could have been made than that of Mr. Hallen, though some objection might be raised on the ground of his comparatively junior standing in the service.

On the Bengal side of India nothing has as yet been done to assimilate the veterinary department to that of England; and there appears to be no immediate prospect of any steps being taken to carry out the terms of the warrant, which was published more than three years ago. Not a single veterinary surgeon of the Bengal army has as yet been promoted, while several in Bombay were raised to the superior grades long ago. Why is this? Surely there are some men amongst us who are deserving of promotion! That there are many who are anxious to obtain it I can testify; but the question arises, "To whom are they to apply, and how?"

This suspense is very disheartening.

I have often heard both military and medical officers express their surprise at the fact of our having no head to our department in India; but I trust the day may soon come when this very antiquated state of things shall end.

Do you not think that some change should be made in our rate of pay according to the service? At present, a veterinary surgeon in India, whether belonging to the royal or local service, receives the pay of a cornet of cavalry during his first ten years in the country; of a lieutenant for the second ten years; and of a captain after twenty years. Even those, few though they be, of the Bengal army who have

been promoted, do not receive any increase of pay in consequence, and yet in England the pay improves after every five years of service up to twenty-five. Surely a man serving abroad has an equal right to this indulgence. If there were a veterinary surgeon-general in the Bengal presidency to represent this in the proper quarter, it would, I feel certain, be very soon altered.

Yours, &c.,
ARGUS.

To the Editors of 'The Veterinarian.'

THE LATE FATAL OUTBREAK OF DISEASE AMONGST THE FOXHOUNDS IN THE EAST-LOTHIAN KENNELS.

By "SCRUTATOR."

SIR,—Two papers on the above subject have been published by Mr. Gamgee, senior, in the 'Edinburgh Veterinary Review,' and another by Professor Dick has appeared in your Journal. A few comments by an impartial reader will not, I trust, be deemed by you an inappropriate communication, and I shall therefore feel obliged by your inserting it in your extensively read periodical. In the first published account by Mr. Gamgee, under the extraordinary title of 'Extraordinary Phenomenon of Disease and Death amongst the East-Lothian Foxhounds,' he states that, on visiting the kennel on Monday afternoon, the 22nd of September, he "found twenty-eight couples of hounds, constituting the pack that had hunted on Saturday the 20th, *for the first time this season* [the italics are not Mr. Gamgee's] prostrate on the benches, labouring under a violent state of cholera. A case of poisoning was suggested to the minds of every one present, myself included." And, "The water of a particular pond at which the hounds had drank in the heat of the day, occurred to the huntsman as the source of the evil." "I found that a violent irritation of the alimentary passage prevailed; the symptoms were excessive vomiting and purging, spasms of the intestines, and some of the patients voided streaks of blood with the evacuations." "*The first hounds attacked were observed on Sunday afternoon soon after feeding* [the italics are not Mr. Gamgee's], and on Monday morning their disordered state had become general." "Intussusception caused the

inevitable death of the hound that was sent to the New Veterinary College for examination." "Though the *post-mortem* condition shows what ultimately was the cause of death, we are not thereby made acquainted with the first cause, viz., which gave rise to the cholera." "The viscera of the hound examined were sent to Dr. S. Macadam, who tested analytically for various poisons, but failed to discover any." Mr. Gamgee continues, "For the satisfaction of the honorable baronet, the master of the hounds, and the members of the hunt, it were most desirable to clear up the mystery, yet we have reached no farther than conjecture leads to;" and he concludes his paper in these words, "I am disposed to think that no poison, *beyond probably some unobserved condition of the food, existed* [the italics are not Mr. Gamgee's]; then as to the non-hunted hounds escaping, this might also be accounted for, on the basis of conjecture, *by the worked hounds on a warm day being more susceptible to derangements from any substance eaten, if in any way imperfect*" [the italics are not Mr. Gamgee's]. "Drinking cold water," Mr. Gamgee adds, "one can hardly look on as a cause, since all hounds plunge into water to quench their thirst, and *we have no knowledge of a similar occurrence at any former time taking place.*" The last assertion *is Mr. Gamgee's own.*

The preceding are the chief outlines in the meagre and imperfect account which Mr. Gamgee drew up; and he contents himself with having "described the case, so that should anything hereafter be learned or suggested, the whole may be reconsidered." His account is remarkable that it contains suggestive passages, which I have placed in italics, that the most ordinary inquirer would have turned to good account, but which have passed through his mind as water in a sieve. The account is at the same time singularly incorrect regarding a very important point, when he assumes and asserts as a fact, that "*we have no knowledge of a similar occurrence at any former time having taken place,*" seeing he could have been informed that the very reverse was the case, if he had made the necessary inquiry n the proper quarter. He also dismisses, without comment or reflection, placing the circumstance among the surrounding difficulties mystifying the case to him, that more than one-third of the pack which remained in the kennel and were not hunted on the Saturday, and "had been fed off the same food, and out of the same troughs with the hunted dogs, were unaffected," while all the latter were seized within twenty hours after feeding. It does not therefore seem surprising that Mr. Gamgee's professional visit should have proved unsatisfactory, and that, further

advice being required, Professor Dick should have been consulted.

Professor Dick stated that he was unable, from a previous engagement, to visit the hounds until Thursday, the 25th of September, when, to use his own words, "he found almost the whole pack in a state of prostration; exhaustion having succeeded the primary violent evacuations from the stomach and bowels, and general convulsions." He prescribed anodyne treatment, along with restoratives, and friction, and fomentations. On examination of the viscera of several of the dogs which had died, he found that "the internal or lining membrane of the stomach was highly inflamed, as well as that of the intestines, &c., and the extensor muscles of the legs in a rigid condition; the intestinal coats appeared in a state approaching mortification." The Professor, desirous of obtaining information as to the progressive development of the symptoms, and of receiving the fullest particulars as to their alleged cause and origin, addressed two letters, containing a number of important interrogations, to the huntsman and Sir David Baird, the latter of whom, "not being at all well," requested his friend Captain Kinloch to write in reply; and the following is a brief abstract of the valuable information from these two sources — the most unexceptionable authorities on the subject—from their long personal connection with the pack. Mr. Atkinson in his reply states "I fed the hounds on Sunday the 21st of September at half-past nine in the morning, *and they fed as well as usual.* At four in the afternoon I was walking them out on the grass, and three of the hounds I saw were very unwell; one of them in particular was lying on his belly, with his legs stretched out quite stiff. I was up at five o'clock on Wednesday morning (a typographical error in place of on Monday morning, as in the MS.), and when I went into the kennel *not one* of the hounds could move—all were convulsed and twitching —*not one* could touch food that day." "The first bitch died at three o'clock in the afternoon" (that is, Monday), "the second at half-past four." Captain Kinloch answered the Professor's questions *seriatim,* as follows:—"The hounds must have left their kennel soon after four a.m. on the Saturday morning (the 20th of September). They were thrown into covert at six a.m., and were *hard at work* till one p.m. They did not get home before three p.m. They were not fed till they had been home for an hour and a half. Their food was the customary porridge and gruel (not milk, as is printed), *with some flesh added;* the porridge or puddings being made half of oatmeal and half of Indian corn. They were quite

well on Saturday night. *The food ascribed above is their usual food during the hunting season.* When not hunted, the porridge is thinner and more gruel is added. There were twenty-eight couple out. *It was a long day for an opening day, and the weather was intensely hot.*" Captain Kinloch gives a list showing the ages, number, and sex of the hounds that died—nineteen in all—out of which there were thirteen bitches, and the rest dogs. The greatest proportion of dogs that died were the six-year old. "The first death was on Monday afternoon (not Wednesday as printed). By Wednesday morning there were five or six couple dead. The rest lingered on for ten days longer, the last case occurring on the fifteenth day *The hounds have twice been taken ill with similar symptoms in each case after hunting in the same covert always early in the season; never* as the *season went on*, but never so badly as in the present outbreak. On one occasion Mr. Fletcher lost three couple out of ten couple hunted." In three weeks the surviving hounds were out again in good work. The important points altogether unnoticed by Mr. Gamgee in his first account, which Professor Dick's questions elicited, were, that the hounds had *a long and hard day's work for an opening day—that the weather was intensely hot—that flesh was for the first time added to their ordinary food*, which was also made thicker *when the hunting season commences*—and that the hounds have twice *been taken with similar symptoms, always early in the season, never as the season went on.*

The morbid appearances in one of the dogs examined by Dr. Thomson showed strong inflammatory action of the serous and mucous membranes of the stomach and intestines, and intussusception, the invaginated portion of gut being about fifteen inches, and quite gangrenous. In the second dog examined there was no intussusception found, and in "the chemical examination, when special search was made for testing the presence of strychnine, and the poisonous metals, none of the processes revealed the slightest evidence of the existence of poison in any of the organs examined." Dr. Thomson concludes his report thus:—he had "simply to state that the chemical examination does not throw any light on the death of these animals, nor on the morbid appearances which their organs were found to present."

It is admitted on all hands that the prominent symptoms of the disease were vomiting and purging, with muscular spasms—the effect of highly inflammatory action; and the appearances on dissection clearly showed its seat and nature. "Res est notissima, sed causa latet." A little reflection was sufficient to convince any but a prejudiced reasoner that the

dogs had not been poisoned from deadly poison placed in the covert where they were hunted, for the purpose of destroying vermin, as may be supposed, seeing the dogs fed as usual after their return to the kennel, and continued well and unaffected for nearly two days; and on these points Professor Dick's remarks are conclusive. He justly observes, "There is no instance on record of the appetite remaining unimpaired upwards of twelve hours *after* the administration of an acrid deadly poison." And they could not have been poisoned by any deleterious substance being mixed accidentally or otherwise with their food, as *all the dogs who partook* of it would have *suffered* more or less; but the fact is, that that portion of the pack alone was seized which had been hunting, while the other portion, which remained at home in the kennel, and was *not out*, although fed out of the same trough, and with the same food, was altogether unaffected. It may be said that the food alone cannot therefore be alleged as the *sole* cause of the outbreak, and Professor Dick gets over this difficulty by referring it to various co-operating and concurring predisposing and exciting causes; and his reasoning is well deserving of careful consideration. I may not agree with him *in toto* as to the analogous nature of the braxy in sheep, and the affection in pigs arising from over-feeding, with the disease affecting the fox-hounds; but his explanation cannot be refuted by groundless assertion—it must be met in a spirit of scientific examination, founded on sound practical and pathological knowledge.

The fullest particulars of the history of the outbreak are now before the public and the profession—its origin, along with the symptomatology, and nature, and seat of the disease. To what causes can so many deaths, and such a train of violent symptoms, be ascribed? If Professor Dick's opinion be objected to, let the grounds of its rejection be fairly stated; it will never do by unmeaning generalities to dismiss so inviting and important a question as Mr. Gamgee has done, when he says, "Hitherto we have only seen consequences; causes and their relations are what we have now to learn."

Mr. Gamgee seems to be ignorant of the first principles of physiological pathology regarding the process of digestion, viz., that food, which acts as a natural stimulant in the healthy state of the assimilating functions, becomes a morbid irritant when taken in large quantities, especially if it is of a less digestible quality than the food on which the animal has been previously accustomed to be fed, and when, taken in certain conditions of the system, occasionally produces all the effects of a deadly poison in the digestive organs. He is

at the same time so wholly absorbed with the idea of contagion being the only source of the propagation of disease, as to be unable to divest himself of the influence of this favorite theory, and to enter into a dispassionate consideration of the various causes which modify attacks of the different affections to which cattle are liable, and particularly to such as are connected with and dependent upon changes of feeding, especially from mild farinaceous substances, to those derived from the animal kingdom, which are of a more stimulating nature, and are more difficult of digestion.

In conclusion, I have only to remark, with reference to Mr. Gamgee's second paper, that it appears to me altogether uncalled for, for it does not contain one word of additional information, but is a mere rambling effusion of personal invective and professional pique, that another's opinion and skill had been preferred to his own wordy and incongruous tirade. He tells his readers he found the subject a mystery, and they can tell him that he left it a greater one, and enveloped it with new difficulties of his own making. From overweening and insolent self-conceit, he cannot conceal that his real motive for writing was merely to find fault, and not to refute error or disseminate knowledge; and that such is the case plainly appears from what he says, viz., "that I had devoted an evening over Professor Dick's long article, and had read to the end of it, and the whole case, but discovered I had spent so much valuable time to no purpose." His readers will have no difficulty to discover that he was drawing largely from himself in describing another, and had graphically illustrated the nature and effect of his own writing, the perusal of which they had found a most unprofitable task. He adds—"Not the shadow of a new fact does Professor Dick's account contain, while his speculations and conclusions have either no reference to the case in point or are drawn from fictitious data." The very reverse of this is the truth, as Professor Dick deals only with the new facts of the case, which Mr. Gamgee has wholly overlooked and left unnoticed, and conjured up shadows which have no reference to the case, and are drawn from fictitious data—the phantoms of his own brain. Mr. Gamgee makes two egregious mis-statements. He says—"Professor Dick makes no account of two items of information conveyed to him in his published letters. He refers first to the death of the bitch, the carcase of which the huntsman sent him. In place of blinking the case, the Professor explains what he considers its death arose from, and has given Dr. Thomson's very full and minute report of the *post-mortem* appearances and chemical examination of

the animal." Secondly, Mr. Gamgee refers to the second series of the facts which are related by Captain Kinloch in his reply to Professor Dick, who gave him the very information he was so anxious to obtain by the questions he submitted to him, and which Mr. Gamgee, to his great discredit, had ignored and left without investigating into in his one-sided and one-ideal view of the case, which seemed to have paralysed all his inquiries through a mysterious influence. But for Professor Dick's interrogatories, the important information as to similar attacks having occurred, and that at the beginning of the hunting season, would not have been made known, so that Mr. Gamgee's description of the case would have continued the baseless fabric of a vision—not as a beacon to direct the course of further research, but an *ignis fatuus* to mislead and bewilder. Can anything be more unscientific and erroneous than the view Mr. Gamgee shadows out as to the cause of the spasm vomiting and purging, which gave rise in every hound that died to invagination of the intestines? It is not the fact that there was intussusception in the bowels of every dog that died. It was certainly found in one dog, but did not exist in the bitch which the huntsman sent the body of for examination. When intussusception exists as an idiopathic disease, the emptying of the bowels below the invaginated portion may take place, but the *continuance of purging during the whole course* of a disease incontestably proves such a state of obstruction could not possibly primarily exist from the commencement; and therefore to conceive, as he says, "that a ligature passed round the small intestine indicated a state analogous to that of the East-Lothian hound in the latter stage" is a groundless assertion. The solitary case of intussusception found was the effect of the increased peristaltic motion resulting from inflammatory action in the affected organs. Can a more convincing proof be adduced of the want of all practical knowledge in its application to a case be afforded than his belief that it was the impervious state of the bowels which rendered every effort to relieve abortive, seeing that his conjecture was founded upon a condition of the existence of which he had no evidence whatever while the violent inflammation admitted by all and denied by none explains the whole case? As to the cause of that inflammation Professor Dick has offered his opinion, and has brought forward in its support a series of accumulative facts, and their relative bearings, which in no other mind but in one constituted like Mr. Gamgee's would any attempt be made to gainsay. As Mr. Gamgee could *do nothing* himself, he is determined to withhold from others all credit for their laud-

able attempts to *do something*. It is vain to reason with an incorrigible nature; witness what he says in reference to Professor Dick's remarks on Dr. Thomson's chemical report, —"that it proves the absence of any poisonous material," "whilst I say" (so writes Mr. Gamgee) "the report proves nothing at all." *Ex his disce omnes.* Whatever difference of opinion may arise regarding Professor Dick's view as to the cause of the outbreak, his advice cannot be too rigidly enforced, that at the commencement of the hunting season foxhounds should not be put at once to long-continued hard work, or not be overfed when first hunted with flesh, to which they had not been accustomed during the non-hunting season. —I am, sirs, &c.,

To the Editors of the 'Veterinarian.'

Facts and Observations.

THE ROT IN SHEEP. — We learn from the agricultural papers of Scotland, and the North of England in particular, that the rot prevails to a great extent among the sheep, and that very serious losses are taking place week by week therefrom. The malady is said to be existing on farms which have hitherto been exempt from it.

Our own experience testifies to the fact that large numbers of Cheviot ewes, which have travelled southward to be disposed of for breeding purposes, are the subjects of the malady; and that several farmers in the grass-land districts of the Metropolis have in consequence thereof sustained very heavy losses. The disease is also reported as being very rife in some parts of Devonshire.

CONVICTIONS UNDER THE ORDER IN COUNCIL REGULATING THE REMOVAL OF SHEEP TO OR FROM PARISHES IN WHICH VARIOLA OVINA EXISTS.—Mr. Jas. Langford, farmer, of Hungerford, was recently summoned before the Marlborough county magistrates for having removed certain sheep to Aldbourne, without a certificate from the inspector.

This was the first summons that had been taken out since the Order in Council was issued.

The facts were not disputed by Mr. Langford, who, however, urged in defence that all that had been done had been in ignorance. Had the certificate been obtained of Mr. Duck,

Veterinary Surgeon and Inspector for the district of Marlborough, of course the law would not have been infringed.

As this was the first case that had occurred in the county, and as the defendant did not appear wilfully to have broken the law, the magistrates inflicted a fine of 10*s* only, and 10*s*. costs.

Mr. Beverstock, of Chilton Foliatt, farmer, was also summoned for a like offence committed on the 6th of November. The defendant was fined 1*s*. only and costs.

Poisoned Milk.—The '*Annales d'Hygiène Publique*' relates that several officers of English vessels off Malta exhibited symptoms of poisoning after partaking of the milk of goats which had been fed upon a plant called by the inhabitants '*Tenhuta*,'—Euphœbia helioscopia.—*Lancet.*

The Cattle Plague, or Rinderpest.—We learn that the cattle plague has again been making great ravages in various parts of the Austrian dominions. Not to mention Moravia, Galicia, and Bohemia, where it has caused very great losses, it is reported that, in 198 communes in Hungary alone, out of 104,000 head of cattle, nearly 18,000 animals have died. In the north-west the disease is still raging, but in the other districts it is considerably abated.

Pleuro-Pneumonia among the Continental Cattle.—A meeting of graziers and veterinary surgeons was held lately at Leipsic to take into consideration the best mode of preventing the spread of the lung disease among horned cattle. Measures, such as the confinement of the diseased animals, the prohibition of all sales, &c., found zealous advocates; but the majority admitted that all coercion, however ingeniously arranged, becomes difficult in practice, and that any restrictions to trade in cattle would be ruinous to the feeder as well as to the breeder. That principle having been admitted, the conference turned upon the other measures of precaution, and some curious facts with respect to inoculation were listened to with great attention. This practice, which was first tried some ten years back, was strongly opposed, both in Germany and France, but it has been adopted when the malady was prevalent.

Professor Haubner, a Saxon veterinary surgeon, calculates that the disease called pleuro-pneumonia carries off from 25 to 50 per cent. of the animals affected by it, whereas in the districts where inoculation has been practised the loss does not exceed 10 per cent., and the mortality is sometimes reduced to 2 per cent. This calculation has been confirmed

by observations made in the neighbourhood of Magdeburg, where it has been practised on a large scale for the last nine years, and where the local practitioners, without any official character, have inoculated as many as 16,000 head of cattle.

It has been further ascertained that this proceeding is useless as a remedial measure unless adopted in time, and that it may be likewise used as a preservative for animals. The farmers who attended this meeting more than once expressed their apprehension that the inoculation of healthy animals might introduce the disease into their farmyards. Professor Haubner stated that of 100,000 inoculations not one had produced any injurious effect in this way.—*Times*.

Horses Killed by Oilcake.—The '*South Eastern Gazette*' states that Mr. John Sills, stone-merchant, of Maidstone, has sustained a very serious loss. A barge belonging to Mr. Sills had brought a freight of oilcake to one of the wharves at Maidstone; and, after it had been cleared, the sweepings were gathered up and taken to Mr. Sills' stable. On Christmas Day a quantity of the sweepings was given to three valuable horses; and after they had eaten about half a pint each, they all became very ill. As they continued to get worse, it was decided to take two of them to a veterinary surgeon, but they fell down dead on the way. No hopes were entertained of the recovery of the third. A portion of the cake was given to a number of rabbits, some of which died shortly after eating it. The remaining portion has been subjected to an analysis, but the result has not been made known at present.

Remission of the Duty on Tobacco for Sheep Dressing.—The '*Hawick Advertiser*' publishes the following communication, upon a subject of considerable importance to agriculturists, from Dr. Adam Elliott, Goldielands, Secretary to the Hawick Farmers' Club:—"For some time past the Club have been in correspondence with certain parties regarding the obtaining from Government the use of tobacco free of duty for the purpose of sheep dressing. The Club is now happy to state that this boon, which has frequently been requested without success, has been granted. The Club desired Mr. Hubback to tender their best thanks to Lord Henry Scott for his kind and ready exertions in procuring this favour from Government. It is understood that some ingredients are to be added to deprive the weed of its too great fragrance, without in any measure interfering with its efficacy as a sheep-dressing composition. It will be used

in a liquid form, and as soon as the preliminaries are adjusted, the public will obtain the benefit."

Artificial 'Siamese Twins.'—A curious and interesting experiment was lately made at Strasburg to effect the union of two animals, so that they might, to a certain degree, have a life in common. It was, indeed, producing artificially what nature produced spontaneously in that extraordinary phenomenon, the Siamese twins. Two white rats, of the Albino species, were selected for the experiment, probably as being more manageable than their darker brethren. An incision was made on the right side of the one, and on the left of the other, involving the skin and the cellular tissue under it. The surfaces of the two wounds were kept closely together by sutures and bandages until the sixth day, when union by the first intention was found to have taken place. They then walked side by side, being united by a fleshy bank. An attempt subsequently made to poison both by the mouth of the one did not succeed, but an injection thrown into the jugular vein of one animal was found to have entered the superficial femoral veins of the other, showing clearly that an intimate vascular union had already taken place between them. This interesting experiment may have a most important bearing on restorative surgery.

De Candolle on Species.—In an article on the *Cupuliferæ* in the '*Bibliothèque Universel*,' M. Alphonse de Candolle observes, "hereditariness is an attribute of races as well as of species. To cite an evident example, the Jewish people have a certain hereditary configuration, which they preserve under all climates and influences of nutrition, without any one pretending that they constitute a species. Non-hereditariness may overthrow a pretended species, but hereditariness, even when it appears to be indefinite, does not prove the existence of a species."

Ozone produced by Plants.—M. C. Kosman has communicated to the French Academy a series of observations, from which he draws the following conclusions:—1. Plants evolve ozonised oxygen from their leaves and green parts. 2. They disengage during the day ozonized oxygen in a greater ponderable quantity than exists in the circumambient air. 3. During the night the difference between the ozone produced in the plants, and that contained in the air, becomes *nil* in the case of isolated vegetation, but where the plants grow thickly and vigorously, this ozone is more abun-

dant than that of the air. 4. Plants in the country evolve more ozone during the day than town plants. 5. From this cause country air is more exhilarating than town air. 6. In the midst of towns, and of a dense population, the night air exhibits more ozone than that of the day, but in proportion as the animal population diminishes, and the vegetable kingdom predominates, the diurnal ozone increases until it exceeds that of the night. 7. The interior of the corollas of plants do not evolve ozone. 8. Inhabited rooms do not usually contain ozonized oxygen.

Oxygenized Water.—M. Chevreul finds that this preparation destroys colours of an organic origin, just as chlorine does, but more slowly.

Analysis of Air—In his pamphlet on '*Air and Water*,' Mr. Condy points out the facility with which air may be tested for organic impurities by placing in the required spot four or more small white saucers, each containing an ounce of distilled water, and severally one, two, three, four, or more drops of his Patent Ozonized Water, or Disinfecting Fluid, reduced by addition of two parts of water. The rate at which the pink colour of the permanganate disappears, indicates the proportion of impurity present. If during a night or day the colour vanishes in the saucer containing four drops, he states that the impurity verges on positive pollution.

The Meeting of the Royal Agricultural Society for 1863.—It has been announced that the next meeting of the Royal Agricultural Society will be held at Worcester, and that the time has been arranged for the week commencing July 20. The site selected for the exhibition is in the immediate vicinity of Worcester, on the Battenhall property, belonging to Sir Thomas Sebright. The ground selected for the show-yard has all been levelled and drained. The extent is thirty-nine acres. The fields for ploughing, reaping, mowing, and other agricultural operations, which are near at hand, measure together above 100 acres more. A branch will be run out of the West Midland Railway, which passes near, into the show ground. The amount subscribed by Worcestershire for the necessary expenses of the meeting is £4720. The special prizes given by the local authorities are not yet arranged.

THE VETERINARIAN, FEBRUARY 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

OUR PRESENT NUMBER.

Our present number, apart from the communications of Professor Brown and Mr. Dyer, will be found to be more than usually replete with rare and interesting cases of disease. Affections of the cerebrum rightly viewed are among the most instructive which come before the investigator of pathology, and of these no less than four find a place in our pages. The one recorded by Professor Varnell, as occurring in the practice of Mr. Woodger, has but few, if any, parellels in veterinary medicine. We are not aware that the records of veterinary science, in this country at least, afford more than one instance of a so-called hydatid in the brain of the horse; and, as we have stated in a foot-note to Mr. Woodger's case, even this was not a true example of the existence of the *entozoon* in the cerebrum, but rather of a cyst containing cholesterin.

This immunity is the more remarkable when we consider the frequency with which sheep are affected with hydatids; it not being very unusual for a dozen or more to be thus diseased in a flock of even a hundred. Why is this? is a question far more easily asked than answered; but, nevertheless, now that science has unravelled the mystery of the development of hydatids, it ought not to rest until light is shed on the admitted fact of the entozoon being so frequently met with in some animals and very rarely in others. Here is a wide and a profitable field also for the helminthologist, and one we should desire to see cultivated by those who alone are fitted for the task by their knowledge of parasitic development in general.

We ought not to close these remarks without also directing our readers' attention to a most remarkable case of a *needle being found floating loosely within* the pericardial sac

of a cow. The case is well described by a student, and it will be seen that it contains information suited for the established practitioner, as well as for the tyro in medical science. A few observations of our own are appended to the case, explanatory of our examination of the specimen.

We trust that this influx of valuable cases is but an earnest of others which are to follow, even if their narration should occupy a greater space than is usually devoted to this division of our journal.

THE VETERINARY PUPILS AND THE LANCASHIRE DISTRESS.

We have been much gratified by observing that the pupils of the Royal Veterinary College have not been behindhand in the work of charity and benevolence, but that they have promptly seconded the exertions of others to relieve the Lancashire operatives in their unprecedented distress. Almost immediately after the assembling of the class in October, a committee was formed among themselves, as the spontaneous efflux of their wishes, to adopt means whereby weekly collections might be obtained. This step received the hearty concurrence of the teachers, who, although encouraging them by subscribing a small amount to the fund, preferred, nevertheless, to leave the entire management of the matter in their own hands. Its result has been most satisfactory, and a sum, although not large in amount if simply viewed in the abstract, but really so when relatively considered, has been forwarded through the Lord Mayor to the distressed operatives. This act speaks well for those who ere long will rank as members of our profession. It is an earnest of their success in after life, and cordially do we render honour to whom honour is due.

Extracts from British and Foreign Journals.

ON THE FEEDING VALUE OF STRAW.

The wet weather which prevailed during the greater portion of the late hay-making season has, we fear, in many places greatly deteriorated that crop. In a recent ramble through the counties of Kildare, Carlow, and Wicklow, we saw but too plainly the ravages which the humid element had made on hundreds of portly stacks of hay. We were present at the sale by auction of the produce of a meadow of eight acres, which realised a little more than 1*s.* 3*d.* per cwt. This is by no means a solitary example, as we have been informed by several auctioneers that large quantities of inferior hay have been disposed of this season at exceedingly low prices.

Very inferior hay is generally purchased by the hay dealers, and is mixed by them with the good article; and so skilfully, too, that the mixture of good and bad is often sold at the price commanded by the good, when disposed of *per se*.

We are clearly of opinion that inferior, fibrous, washed-out hay is dear almost at any price, and that the money paid for such an article would be much better expended if invested in oats and straw.

Very discrepant, indeed, are the opinions relative to the nutritive and the fertilising value of straw. In Germany and many parts of Britain it is held in such high estimation as a manure, that its sale is strictly prohibited in most leases. In our own country many farmers believe it to be almost valueless as a feeding substance, whilst others entertain a high opinion of its alimentary value.

The results of the experiments of Lawes and Horsfall prove that straw chaff is, as an adjunctive article of food, deserving of the farmer's attention. We think, too, they demonstrate very clearly the wastefulness of the practice which prevails on so many farms of converting all the straw into litter, solely for the purpose of increasing the manure heap.

That straw, in a chopped, or what is still better, thoroughly bruised state, is a most useful feeding substance, the results of its chemical examination, and of actual feeding experiments with it, place beyond doubt; and as its price is comparatively low, it will be found a more economical feeding stuff than the washed-out coarse hay to which we have referred.

The analyses of hay which from time to time are published exhibit everything but uniformity. This arises from the complex and unconstant nature of the article, which, as is well known, is a variable mixture of various grasses and clovers.

Good hay, carefully saved, has, on an average, the following composition:

Water	15
Flesh-forming substances	8
Fat-forming matters	44
Woody fibre	27
Ash (mineral matter)	6
	100

Coarse hay, which had been subjected to the influence of heavy and constantly recurring rain, will probably have the following composition:

Water	14
Flesh-forming substances	4
Fat-forming substances	37
Woody fibre	40
Ash	5
	100

The following table, compiled by Dr. Voelcker, exhibits the composition of the straw of the cereals; and by comparing the analyses set forth in it with those above given, a tolerably accurate estimate, for practical purposes, of the relative value of both classes of feeding substances, may be realised.

	Wheat Straw.	*Rye Straw.*	*Barley Straw.*	*Oat Straw.*
Water	14·23	14·30	14·30	12·06
Flesh-formers	1·79	2·29	1·68	1·63
Fat-formers	31·06	31·15	39·98	37·86
Woody fibre	45·45	43·18	39·80	43·60
Ash	7·47	3·08	4·24	4·85
	100·00	100·00	100·00	100·00

From these tables it will be seen that the only very important difference between hay and straw is the high percentage of flesh-forming substances in the former. But it should be borne in mind, when comparing the relative value of the two articles, that the amount of flesh-formers in a substance is no longer taken as the absolute criterion of its nutritive value. There is a good reason to lead us to assume that all the fat-forming substances in the oil-cake given to

animals are assimilated, whilst a large proportion of the nitrogenous or flesh-forming substances pass through the animal body unaltered. This fact—for so we believe we may term it—is of importance to farmers who use their straw chiefly as food for cattle. The straw is deficient in flesh-forming matters, and abounds in fat-forming elements. In the oil-cake there is an excess of the flesh-forming, as compared with the fat-forming substances. It is clear, then, that by a mixture of the two articles the "happy mean" would be attained.

Many of the best feeders in England employ large quantities of straw as food. It is stated that some of them adopt a peculiar and secret mode of preparing the substance, whereby its value is greatly enhanced. If we might venture an opinion on the subject, we should say that the 'secret" consists in using only good straw, chopping it finely, and adding it in proper proportion to the other articles of the animal's diet.

As straw includes a considerable proportion of woody fibre, which is hardly, if at all, digestible, its mechanical preparation is a point of great importance. By chopping finely or thoroughly bruising the article, its fibrous structure is disintegrated in a degree proportionate to the amount of violence to which it is subjected. The nutritious particles are for the most part enveloped by the fibre, which to a great extent protects them from the action of the juices of the stomach. By breaking up the fibre the gastric juice is allowed to come in contact with the digestible portions of the straw; and, consequently, a larger amount of these substances is assimilated. Straw is one of those substances which may be cooked or fermented with advantage, as by either of these processes the fibrous matter is softened and broken up to such an extent as no longer to protect the albuminous, oily, gummy, and the other useful matters from the action of the solvents in the stomach.—C. A. C. in the *Weekly Agricultural Review.*

THE DISQUALIFIED PIGS AT THE BIRMINGHAM SHOW.

The following correspondence has appeared in the agricultural papers relative to the disqualification of a pen of pigs, the property of the Hon. Colonel Pennant, M.P., at the late meeting of the Birmingham Cattle Club.

"*To the Editor of the 'Mark Lane Express.'*

"Sir,—I think it right to make known the steps which I have taken, in consequence of the disqualification (on the ground of their not being of the same litter) of some pigs sent from my farm to the late exhibition at Birmingham. Feeling that it was due to the character of my farm bailiff (Mr. Smith) that I should afford him the fullest opportunity of vindicating himself from the charge of dishonesty or inaccuracy, which is implied in the decision of Professor Gamgee, I immediately ordered the sale of the pigs in question to be stopped, and that they should be sent back to this place—my bailiff writing at the same time to the secretary of the Birmingham Society, requesting that some one connected with the Society should have the pigs marked. I have called for the highest available professional opinion on the pigs, which opinion will be made public; and I have ordered that the pigs should eventually be killed at my own farm, and the jaws carefully preserved, in order that they may remain permanent evidence of the accuracy or the inaccuracy of the opinion pronounced at Birmingham. The declaration of my bailiff, and of the man in charge of the pigs, will be made public.—I am, &c.

"E. G. Douglas Pennant.

"*Dec.* 13, 1862."

"*To the Editor of the 'Mark Lane Express.'*

"Sir,—In accordance with the pledge given in my letter of the 13th instant, I now forward the opinions of three veterinary surgeons, who have examined the pigs sent from my farm, which were disqualified at Birmingham. The first is that of Mr. Barth, a veterinary surgeon of considerable experience and practice at Chester; the second, that of Mr. Farrall, the consulting referee of the Royal Agricultural Society of Ireland; the third, that of Professor Simonds, of the Royal Agricultural Society of England. I also furnish the statement of my farm bailiff (Mr. Smith); and as he has been but for a short time in my service, I think it due to him to state that I received, on taking him into my employment, the highest recommendation of him from General Hood, who had known him for a considerable time, and from whom I have lately received a letter expressing his conviction that he would not be wilfully guilty of deceiving me or the public by exhibiting animals of a different age from that represented. I have only

to add that the pigs will now be slaughtered, but that the jaws will be preserved for future reference, if required.

"I remain, your obedient servant,

"E. G. DOUGLAS PENNANT.

"PENRHYN CASTLE, BANGOR, *Dec. 25th.*"

[Copy.]

"VETERINARY INFIRMARY, PRINCES STREET, CHESTER,

"*Dec.* 10*th*, 1862.

"This is to certify that by the request of the Hon. Colonel Douglas Pennant, M.P., of Penrhyn Castle, North Wales, I have this day examined the ages of three pigs. I find their ages are respectively between ten and eleven months, and that each is uniformly of the same age. I observe there is a little irregularity in the dentition of one of the pigs, viz., the milk or first incisors are not cast, yet they are sufficiently loose to separate from the gums immediately, and the permanent teeth are formed to succeed them. It is my opinion that this deviation from the laws of nature which guide us in determining the ages of our domesticated animals has been produced by some previous derangement of the natural functions of the said pig. I find also that the dentition of a second pig is not in so advanced a stage as of the third pig. For these appearances I can make every allowance, as I never knew the process quite uniform in one litter.

"J. T. BARTH."

[Copy of Col. Pennant's letter.]

"PENRHYN CASTLE, *Dec.* 12*th*, 1862.

"Sir,—I have received the certificate which you forwarded to me about the pigs examined by you at my farm. As on these occasions it is desirable that the language of the certificate should be as clear as possible, I should be obliged if you would let me know distinctly whether there is anything in the appearance of the teeth of those animals which in your opinion would prove that they are not of the same litter or of the same age.

"I remain, &c.,

"E. DOUGLAS PENNANT.

"Mr. Barth."

[Copy.]

"VETERINARY INFIRMARY, PRINCES STREET, CHESTER,

"*Dec.* 13*th*, 1862.

"Sir,—In reply to yours received this morning, I beg to say there is nothing whatever in the appearance of the pigs that would prove or excite suspicion that they were not of the same litter or of the same age. Although the process of dentition is not in such an advanced stage of pig No. 1 as of pig No. 2, neither is it in pig No. 2 as of No. 3, still, it is my opinion the three pigs are of the same age. It is a well-known fact by all who have made use of opportunities that have been afforded them of observing the changes that take place with the teeth of pigs, that scarcely in one litter in a hundred will they find the process of dentition uniform. I of course cannot presume to say your three pigs are of the same litter, but as I am of opinion they are of the same age, and

there is nothing in their external and general appearance to excite my suspicions on that point, I cannot see any grounds to object to them as they have been represented, viz., of the same age and of the same litter.

"I remain, sir, your faithful servant,

"J. T. Barth.

"The Hon. Colonel E. Douglas Pennant, M.P."

[Copy.]

"Dublin, *Dec.* 22*nd*, 1862.

"Sir,—I beg to enclose certificate of the examination of your pigs, and am happy to say that I can most thoroughly endorse the statement of your bailiff, Mr. Smith. I have made as careful an examination as I possibly could, and do not entertain the shadow of a doubt that the certificate I herewith send is correct.

"I have the honour to be, sir,

"Your most obedient servant,

"James J. Farrall, V.S.

"The Hon. Colonel Pennant."

[Copy of Enclosure.]

"I hereby certify that at the request of the Hon. Colonel Pennant I have this day examined, at Penrhyn Castle, three sow pigs with reference to their age, and am distinctly of opinion that said pigs are of the same age, and from their general appearance I would believe them to be of the same litter.

"James J. Farrall, V.S."

[Copy.]

"Holker, Lancashire, *Dec.* 24*th*, 1862.

"Sir,—I have the honour to inform you that I examined the pigs agreeable to your request, and also some others—pure-bred—which I selected from the several litters. The result of this examination satisfies me that some of the pigs have accidentally been mixed, so that it was believed they were of ages different from those indicated by their dentition. I enclose a certificate of my opinion of the Birmingham pigs.

"I am, sir, your most obedient humble servant,

"Jas. B. Simonds."

[Copy of Enclosure.]

"Penrhyn Castle, *Dec.* 23*rd*, 1862.

"I hereby certify that I have this day examined three pigs, the property of the Hon. Colonel Douglas Pennant, M.P., identified as being the same animals which were exhibited at the late Cattle Show at Birmingham, and find that a variation exists in their teething, which is not consistent with their being all of the same litter.

"James B. Simonds,

"Professor Royal Veterinary College."

"Penrhyn Farm, *Dec.* 2*nd*, 1862.

"Sir,—The above pen of three sow pigs are part of a litter of seven farrowed on February 12th, 1862, viz. (three boars and four sows), one

sow pig killed by the dam, the boars sold to various gentlemen, the remaining three sows are those in question. In the litters before and after February 12th there was not one sow pig which could have been, even by accident, mistaken for one of the three. Robert Owen, the man in charge of the pigs for seven years, will testify on oath to the fact of the three pigs being all of one litter. I am also ready to depose to the same fact, and to the truth of the above statement.

"I am, sir, your very obedient servant,

"Robt. B. Smith,

"Bailiff for the Hon. Col. E. G. D. Pennant, M.P."

No. 1 boar, May 30th, Mr. Reeves, of Passingham, Bucks.
No. 2 boar, August 9th, Mr. Tredwell, Woolcot, Bucks.
No. 3 boar, October 21st, Mr. Darbishire, Pendyffryn, Conway.

ON THE ESTIMATION OF NITROGEN IN MANURES AND OTHER SUBSTANCES.

By J. Walker.

This process is based on the fact that $NH_4O + ZnCl$ in solution forms $ZnO + NH_4Cl$.

The sample is mixed with soda-lime, put into a combustion-tube and decomposed in the ordinary way; but instead of passing the resulting gases into HCl or SO_3 as recommended by Fresenius, they are at once passed into a dilute solution of ZnCl. It is obvious that one equivalent of NH_3 will form one equivalent of ZnO, which only requires to be filtered, washed, dried, and ignited. From the weight of the ignited precipitate the quantity of N or NH_3 is easily calculated, 40 of ZnO being equal to 14 of N, or 17 of NH_3. This process has been practised by me for the last two years, and gives most accurate results, and I can with perfect confidence recommend it.

It may occur to some chemists that solutions of other metallic salts will answer the same purpose, but I prefer zinc to a number of others for the following reasons:—Solutions of iron are difficult to preserve without undergoing decomposition. The precipitate formed with proto-salts of manganese is partially altered into peroxide upon ignition. Solutions of cobalt or nickel may answer, but they are not so easily obtained in a pure state as zinc. Oxide of copper is not perfectly precipitated by ammonia. A solution of zinc can easily be prepared free from any impurities; it will keep for any length of time without alteration, and whether it be NH_4O, or NH_4O,CO_2, that is passed into the solution, the precipitate is ultimately obtained upon ignition as ZnO.

I prefer to use the solution dilute, specific gravity 1025, and to take about ten fluid ounces for each analysis; for washing the precipitate I prefer to use water at about 150° Fahr.—*Chemical News.*

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Annales de Médecine Vétérinaire, Bruxelles, Août, 1862.

HYGIENE OF THE FOOT OF THE ADULT HORSE.

By M. F. Defays, Professeur de l'Ecole Vétérinaire de Bruxelles.

Under this title are comprised all the precepts to be observed so as to maintain the feet of the horse in the most favorable condition for the due performance of their functions.

The author considers the *foot,* as accepted by zoologists, as not only the horny envelope or hoof, which covers the extremity of the limbs, and the tissues underneath it, but also all the parts between the coronet and the carpus or knee, in the one extremity and the tarsus or hock in the other. In giving it this extended meaning the best means have to be considered to keep the lower joints of the legs in the most favorable state for the execution of their several movements; to indicate the necessary precautions to prevent the alteration in the shape and volume of the hoof, and the best means to preserve its elasticity and resistance.

All organic productions are subject to physical and chemical laws. The hoof is to be considered as such, and is therefore susceptible to alterations of form and continuity of substance, and alteration in its consistence, &c. These alterations are capable of interfering with the *aplomb* (level bearing), cause pain, impede the freedom of motion, and expose the animal to serious accidents. To prevent these baneful effects it became necessary to submit the foot of the horse to certain means of preservation.

The hoof is, as every one knows, a production of the skin, unprovided with blood-vessels or nerves, and growing by juxtaposition. It possesses from the birth of the animal all the necessary qualifications when the part which produces it is in a healthy condition, but as soon as this is out of order the product is modified and its condition changed. The hoof becomes brittle, or soft, according to the condition of the keratogenous organ (coronary ligament). The hoof is brittle in chronic founder, the frog is softened in contraction, and it is liquified in the so-called canker. In

these cases is it possible to restore the hoof to its healthy state by the application of hoof ointments, stopping of the feet with cow-dung, &c.? Certainly not; the hoof can only be restored by applying medical treatment to the organ which produces it, that is, to the so-called coronary ligament. On the other hand, if the bones, the articulations, ligaments, or tendons, have some faulty organization, which it is evident that hygiene cannot always remedy, the negative results are not, as such, to be attributed to it. Neither can the hygiene remedy the brittleness of the hoof.

The author has deemed it necessary to make these preliminary remarks, to account for the unsuccessful results sometimes obtained, and to define the limits of the hygiene of the horse's foot.

The first thing to be attended to is the *aplomb*, the level bearing or equal distribution of the weight over the limbs. *This can only be obtained by good shoeing.* The shoeing is good—1st. When the feet are kept of equal size for the same animal, both before or behind, and in proportion to the size of the body. 2ndly. When the shoes are not too heavy, and are of equal weight for the animal, both behind and before. 3rdly. When the hoof is not rasped above the clinches, so as to remove the animal product, so essential to the preservation of the crust or wall of the hoof. 4thly. When the ground surface of the foot has not been weakened by undue cutting of the sole and frog, as is customary in English shoeing. And 5thly. When the animal moves freely and with ease, and the shoes wear out regularly in every part of their ground surface.

Shoeing, whatever may have been said against it by some persons, is one of the best means of preservation of the feet of the horse, particularly when done by a skilful shoeing-smith, one who can reason on the rationale of the application of the shoe.

One thing to which no attention has been hitherto paid is the cutting of the hair of the lower part of the horse's legs. This is often done to make coarse-bred horses resemble the better bred, which have naturally short and silky hairs on their legs. This practice has very little inconvenience in summer, but not so in winter, when the animal is obliged to stand in wet, frosty, and snowy weather. The lower extremity, being protected by the hoof, which is a bad conductor of caloric, will take no harm; the horse can stand a long time with his feet on the ice, or in the snow, without in the least lowering their temperature; but when the legs are deprived of the hairs, their natural protection, the cold and the wet,

acting on the skin, often cause cracked heels, furuncles about the coronet, and ulcers on the legs. Trimming of the legs should, therefore, be avoided in winter, in order to preserve the feet and legs in a state compatible with their functions.

The washing of the legs, or taking the horses to the river, in order to cleanse them, has, on the contrary, a healthy reaction on the tissues. It is therefore advantageous; but chilling of the legs should be carefully avoided. In like manner regular work or moderate exercise is also necessary to the health of the horse and the preservation of his limbs, as the activity of the circulation and nutrition is thereby promoted. Under pressure the hoof expands at the coronet, the coronary ligament becomes prominent and turgescent; new hoof is thereby secreted, which covers a circumference in proportion to the volume of the organ in its normal condition. Long-continued rest, on the contrary, renders the circulation inactive, diminishes the nutrition of the parts, reduces the size of the coronary ligament, and the circle of new hoof secreted is, in proportion, small, and the horny box becomes at length reduced in capacity, by which the parts contained in it are compressed, and the freedom of action is lost. The contraction of the foot and the reduced size of the hoof, in a lame leg, have no other origin; moderate exercise is, therefore, beneficial to conserve the feet of the horse in a healthy state.

Under the influence of dry heat the hoof becomes hard, brittle, and reduced in size; but it does not, however, undergo this physical change in a sudden and marked manner, unless other circumstances occur to contribute to it.

The hoof is united to the subjacent tissue by an infinity of small prolongations, which yield to pressure by the imbibing of moisture,—apt to be lost by ordinary evaporation; but if the crust or wall of the hoof has lost its thickness, or, on the other hand, the outer covering has been removed by rasping the feet up to the hair, by which the wall is rendered less permeable; and if, besides these causes, the animal has been standing inactive on dry litter, experience and observation prove that in a very short time the hoof will become dry and contracted. This modification in the form and size of the hoof determines, first, pressure on the parts, and afterwards lameness. It is, therefore, objectionable to place fresh animals in those conditions which cause them to lose the moisture of their hoofs. If it is impossible to put horses which are devoted to the service of the rich otherwise than on dry litter, it would be easy to wash their feet once a day, at least, with clean water, and not to allow them to be pared out, as is recommended by Mr. Miles, so much in repute at the present

time, and to replace the outer covering so injudiciously removed by the rasp with an ointment, so as to prevent and oppose the evaporation of moisture. Grease is generally employed as an impermeable substance, but it is a bad agent; besides, it does not soften the dry crust, and, by penetrating into the nail-holes, compromises the security of the shoes, and when rancid it acts as an irritant to the coronary ligament. Alkaline substances, such as soda, potash, and ammonia, possess the property of softening the hoof and of disuniting its elements. The knowledge of this fact shows at once the mistake of allowing horses to stand in wet or dung impregnated with the ammonia of the urine, or in a straw-yard covered with a thick layer of manure. The moisture thus imbibed is loaded with ammonia, or the elements which constitute it, and which by their alkaline properties soften the horn, dissolve also that of the sole and frog, and cause ulceration. The new horn is dissolved almost as soon as formed, and the irritating fluid, acting on the denuded parts, causes ultimately a sort of fungus growth. It results from these facts that cow- or horse-dung ought not to be used for stopping of the feet, &c. In preference, when there is an indication for restoring the lost moisture to the horn of the feet, clay, linseed poultice, or clean water, should be used. In conclusion, to preserve the horse's feet in as healthy a state as possible, it is necessary—1st. To have good shoeing. 2nd. To avoid the paring and rasping of the feet, as is done by the English shoeing-smith. 3rd. To keep the feet and legs clean. 4th. To abstain from trimming the legs in winter. 5th. To wash the feet every day with clean water. 6th. To allow the horse moderate work or exercise. And 7th. When the outer covering has been accidentally destroyed, to replace it by some impermeable agent.

CONJUNCTIVAL HERNIA OF THE IRIS.

By Dr. Van Holsbeek, Bruxelles.

I received a little dog from a friend in the month of May, which had received a puncture in the left eye. I examined the eye, which the animal was unable to open, on account of an intense photophobia, and ascertained that there was considerable shrinking of the globe of the eye, owing to the escape of the aqueous humour. Conjunctivitis was very acute, and a great portion of the iris had escaped through a large puncture near the border of the ciliary ligament. Although I considered the eye lost, I undertook to treat the case. I made several instillations of the extract of belladonna,

dissolved in distilled water, into the eye, and at the end of four days by this treatment the inflammation had greatly abated. I then cauterized the herniated tumour with the nitrate of silver, which caused its disappearance in three days after, leaving only a sort of stigma, which was removed by blowing white, powdered sugar into the eye twice a day.

Clinique Vétérinaire, June, 1862.

A CASE OF SPAVIN TREATED AND CURED BY THE SECTION OF THE TENDON OF THE CUNEIFORM BONE.

By M. Mandel, Vétérinaire à Strasbourg.

The subject of this case was an entire horse, of the Barbary breed, about twelve years old, and between fifteen and sixteen hands high (*un mètre soixante centimètres*). He had a large spavin on the off hock, from which the lameness was as follows:—In the walk the bearing was principally on the toe, and but seldom, and then imperfectly, on the other parts of the foot; flexion very marked and prolonged. Extension was painful and limited, on account of the size of the osseous tumour. There was dropping of the hip at every step taken, from the contraction and stiffness of the leg, owing to the permanent semiflexion of the hock. In extension, the leg moved all of a piece, like a broom in the act of sweeping. All of these symptoms were more marked when the horse was first brought out of the stable or hurried in his paces. When at rest, the leg was frequently drawn up by a sort of painful, nervous twitchings, which were at times so violent as to cause the foot to strike the abdomen. When standing, the toe only rested on the ground, and at times he knuckled over on the fetlock; an attitude which allows the flexion of the back and eases the pain, but is always attended by a lowering of the hip. The standing over, or lateral changing of place, was always performed with great difficulty and pain.

The spavin or bony tumour occupies two thirds of the hock on the inside, just a little behind the saphena vein. It was hard and callous, insensible to the touch, and the skin covering it had some rough, hairy points, the effects of the actual cautery; which had been repeatedly applied, which prevented the author ascertaining the state of the subjacent tissue.

The horse having become the property of the author, he resolved, as a last resort, to try the operation recommended by M. Lafosse, of Toulouse, in the eleventh volume of his 'Veterinary Pathology,' which consists in a section being made of the

cuneian braneh of the flexor metatarsi musele. This braneh arises from the fleshy part of the muscle, separates from the inserting tendon about the middle of the anterior part of the hoek, passes obliquely towards its inner surface and over the synovial eapsule of the tibio-astragulus artieulation, then a little inwards and baekwards under the saphena vein, whieh it erosses, and runs into a groove, resting partly on the euneiform magnum and partly on the euneiform medium, and is spread over and inserted into the euneiform parvum. In the natural state this tendon has a normal looseness, but when an exostosis is produeed underneath it, as is generally the ease in bone spavin, the result is that the tendon is gradually raised by the inereased deposit of bone, and eonsequently the tension beeomes painful. This tension is so strong as to prevent a deposition of bone under it, which is eonsequently deposited on the sides of the groove, whieh is thereby rendered deeper in proportion as the sides beeome more elevated. It is thus not extraordinary to find many spavins which have, at the spot where the tendon of the *cuneian* braneh of this musele passes, a deep depression, whieh seems to divide the hoek into two halves. Sometimes the inflammation is more or less traumatie of the ligaments, tendons, and the sheaths of the tendons, whieh may eause infiltrations and depositions of phosphate of lime in the subeutaneous eellular tissue, until it forms a sort of eovering to the last-mentioned organs, almost always leaving them just enough freedom of motion to impede their funetion. These bony sheaths are always smooth on their inner surfaee, although the periosteum by whieh they are formed is found, when maeerated, to be eovered with small, sharp, osseous points, like needles, or, but more rarely, like pumiee-stone. Aeeordingly spavin may emanate either from the substanee of the cuneiform and the metatarsal bones, or at least from their artieulatory surfaees, or otherwise it may be the result of the above-mentioned periostie infiltration, but sometimes it is the effeet of the coexistenee of these two pathologieal eonditions; the osseous infiltration into the eellular tissue, when it exists by itself, moulding its shape, as has been stated above, to the ligaments and tendons, so as not to impede their aetion, unless it is very largely developed, whieh it would be in anehylosis. The latter state, however, does not indieate the seetion of the euneian tendon, this being only admissible when the exostosis proeeeds from the tarsal or metatarsal bones. When there is a eomplieation of the two alterations existing at the same time, the operation might still be indieated, but subject to modification, as will be shown in this instance.

In the month of May, 1861, the operation was performed. The horse being cast on the lame and upper leg, the side being drawn up and fixed to the shoulder, the spavined leg was held by an assistant. At the inferior third of the inner surface of the hock, in the centre of the tumour, behind the saphena and at the supposed place of the course of the tendon, an incision was made in a vertical direction, about four centimètres in length, and rather deep, on account of the thickness of the skin and the fibrous degeneration of the cellular tissue, which even had become slightly infiltrated with phosphate of lime. This, no doubt, was solely the effect of the repeated application of the actual cautery, which had been applied very deep and in points, so that it had caused adhesion and an organization of the adventitious element in the tissues. The skin and cellular tissue thus altered were so intimately united with each other, that it was impossible to separate them. The incision was made deeper with considerable difficulty, the fibrous tissue crepitating under the scalpel, but still the tendon could not be reached. Hæmorrhage now supervened, through a small artery being divided, which incessantly filled the wound with blood, and which, in spite of all that was done to stop it, prevented the edges of the incision being examined, so as to ascertain the nature of the tissue incised. After having felt for the tendon amongst this indurated mass without finding it, the author thought of abandoning the further progress of the operation. It was, however, to be supposed that the tendon must be underneath this altered cellular tissue, in a sort of osseous sheath formed by it. He therefore took a double-edged, willow-leaf-shaped knife, having a strong blade, and using it with both hands he endeavoured to insert its point by giving strong pressure on the handle, and at the same time making an oscillating motion, and after great perseverance the blade was made to penetrate through this indurated substance to the depth of two centimètres, at which point a uniform resistance was met with. But there was still a doubt of a section of the tendon having been effected, which, however, from the depth to which the knife had penetrated, ought to have been the case. So, thinking that the tendon might still be in a deep, narrow sheath, and that the knife might not have reached it, the author repeated the previous manipulation, and achieved a section, which, though only fictitious at the time of the operation, ought to have been definite.

When I cast the horse (the author goes on to state) I expected to perform the operation according to the rules laid down by M. Lafosse, that is, incision of the skin and cellular

tissue, opening of the tendinous sheath, elevating the tendon with the proper instrument, and then making a transverse section of the tendon. In this case, however, the repeated cauterizations had thickened the cellular tissue, which was further hypertrophied, fibrionized, and in some parts ossified. The *cuneian* branch of the tendon was thus deeply-seated in a narrow groove or sheath, so that it was necessary to cut through this tough or hard layer, but without making too great a wound. I therefore made an incision in a perpendicular direction, deep and narrow, beyond which I deemed it dangerous to penetrate, as the greater resistance of the bones indicated the immediate neighbourhood of the articulation; I therefore concluded that the section of the tendon must have been effected after having cut through the skin and this amalgamated tissue to the bone. After a slight dressing of the wound the patient was allowed to get up. The flexion of the hock was hardly perceptible; but the leg had lost its stiffness, the foot took a flat bearing on the ground, and there was no lowering of the hip when standing. The success was therefore complete. The author at first almost thought it an illusion, for he did not expect so prompt and so decided a result. He ordered cold water douches to be applied almost continually to the part, to prevent all complication of ostitis or arthritis, and at the end of a fortnight the tumour had more than doubled in size, without, however, causing any appreciable suffering to the patient; on the contrary, the weight was often borne on the lame leg. The healing of the wound now progressed favorably, and the edges were but slightly œdematous. The hypertrophy after the operation, is also mentioned by M. Lafosse. Is it the result of the plastic infiltration, or simply the expansion of the exostosis freed from the pressure of the tendon which bound it? This last supposition does not seem very likely. After three weeks more of the application of the douches, for two hours per diem, the cicatrix was level with the skin, and the tumour ceased to increase in size. The horse was now put to work. His action was regular; the spavined leg had all the suppleness of the other leg, and for a twelvemonth up to the present time, 14th of May, 1862, the horse has been continually kept at fast work; the success of the operation cannot, therefore, be doubted.

In a foot-note the author remarks that in the subcutaneous periosteotomy recommended and practised by the late Professor Sewell, and other veterinary surgeons after him, in spavin, they often must have divided the cuneian branch of the tendon, the essential cause of the lameness, without knowing it, which may go far to explain the success obtained by that operation.

[The operation of sub-cutaneous periosteotomy was adopted by the late Professor Sewell in cases of splints and *ordinary* exostosis *only*. It was not practised by him in cases of exostosis in connection with joints; as, for example, in the disease called spavin.]

PRESENTATION OF A TESTIMONIAL TO PROFESSOR BROWN.

On December 16th, 1862, Professor G. T. Brown was invited by the Professors and Students of the Royal Agricultural College to a dinner, which was held at the Crown Hotel, Cirencester.

The object of the meeting was to present Mr. Brown with a testimonial, consisting of a magnificent time-piece and a purse of sovereigns for the purchase of a microscope.

The time-piece bore the following inscription:

"PRESENTED TO
PROFESSOR BROWN,
BY
THE PROFESSORS AND STUDENTS OF THE ROYAL AGRICULTURAL COLLEGE,
AS A TOKEN OF THEIR ESTEEM AND APPRECIATION OF HIS LONG AND VALUABLE SERVICES TO THE INSTITUTION.
December 1, 1862."

The proceedings were marked by the greatest unanimity, and showed throughout that, whatever may be the feeling as regards the recent disagreements at the college, only one sentiment animated the large attendance, both of professors and pupils, as regards Professor Brown, which was the profound regret with which they viewed his departure from among them.

That this was no sudden act, merely induced by recent events, is further evidenced by the fact that, some years since, the professor received a testimonial of a handsome silver tankard at the hands of his pupils.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

ANNUAL MEETING AND DINNER.

The members of this association held their annual meeting in the Bedford Hotel, George's Place, Glasgow, on Wednesday, 24th December last.

Mr. Dunlop, Glasgow, occupied the chair.

The election of office-bearers for the ensuing year was then proceeded with. The result was as follows:

President.—Mr. Alexander Robinson, Greenock.

Vice-Presidents.—Messrs. James M'Call, Glasgow; John Bryer, Stirling; William Dobie, Irvine.

Treasurer.—Mr. Andrew Robb, Parkhurst.

Secretary.—Mr. Alexander Pottie, Renfrew.

Directors.—Messrs. Anderson and Mitchell, Glasgow; J. M'Dougall, Old Kirkpatrick; J. Donaldson, Paisley; J. Blackie, Bellshill; J. Sharp, Humelson; J. Wilson, Donne, and A. Breckinred, Holytown.

The Secretary brought forward a motion to the effect that this association agrees to protect its members against legal proceedings from any supposed want of professional skill in the treatment of animals, or any presumed neglect on the part of their agents or servants.

The motion was seconded by *Mr. Wilson*, and after considerable discussion *Mr. M'Call* proposed as an amendment that this protection should not be confined or restricted to the members of this association, but that it include all members of the profession in Scotland who are willing to become members of the society, although not members of this association.

Mr. Sharp seconded Mr. M'Call's amendment, which was agreed to.

It being considered necessary for the association to conduct the necessary arrangements for the proposed society for the present, the secretary was instructed to issue circulars throughout Scotland, and the chairman to call a meeting, when convenient, to take the whole matter into consideration.

Mr. Kerr, V.S., Dulry, was proposed, seconded, and duly elected a member of the association.

Mr. Pottie then read a short paper on synovial and bursal membranes, the discussion of which was postponed till the next meeting, in March.

At 5 p.m. the whole company sat down to an excellent dinner, which was served to the satisfaction of all. On the cloth being removed, the remainder of the evening was most agreeably spent; the national, patriotic, and professional toasts taking their prominent part in the proceedings.

ALEXANDER POTTIE, *Secretary.*

Veterinary Jurisprudence.

CARNARVON COUNTY COURT.

Before Octavius J. Williamson, Esq., Deputy Judge.

ACTION FOR £17, BALANCE OF THE PRICE OF A HORSE.

GRIFFITH GRIFFITHS *v.* THOMAS HUGHES.

This court was held on Wednesday, December 10th. About the usual number of cases were entered, some of which were of considerable interest.—Mr. Powell appeared for plaintiff, and Mr. L. Adams, Ruthin, for defendant.

Mr. Powell, in opening the case, said he believed the defence would be that the horse was unsound; but, according to his instructions, no warranty had been given. Plaintiff admitted that when asked if the horse was sound, he said that "as far as he knew, it was."

Griffith Griffiths, plaintiff.—Was a farmer. Some time ago he sold a horse to Thomas Hughes for £37, who asked whether it was sound, and plaintiff said it was, "for what he knew, or anything he had ever seen." Hughes paid £20, and £17 was the balance.

Cross-examined.—Saw a man named John Roberts some days afterwards. He did not come from Hughes to say that the horse was unsound, and that witness must take it back. Had no conversation with him about it, except when he was with Thomas Hughes. When Hughes bought the horse he told plaintiff he wanted it for his brother, but did not tell him to go to his brother for the balance. He promised to pay him at Llangefni fair. Got a certificate from Heyes, of Liverpool, a veterinary surgeon. It came to him by post. Had not been asked by Hughes or any one else to take the horse back because it was unsound.

By Mr. Powell.—The certificate came to him by post. He did not know who sent it; there was no letter with it. Roberts was not present when he sold the horse. Was never asked to take it back.

Mr. Adams then addressed the court. He said the defence was a breach of warranty on the part of plaintiff. There was an impression amongst horse-dealers in Wales that nothing they might say when selling a horse was binding—that a warranty was only obligatory when written; but he would be able to prove that assurances of the good condition of a horse were binding, whether written or verbal. What this man admitted he had said was a warranty, because he ought to have known that the horse was unsound; but he (Mr. Adams) could show that there was no qualification in what he told defendant; it was a positive declaration that the horse was sound:—"I warrant that the horse is sound." Luckily this point could be corroborated by a man of the name of Roberts, whom Griffiths told he had given his word to Hughes that the horse was sound. After Hughes had purchased the horse he sold it to a person in Liverpool; but on being examined by Mr. Heyes, a veterinary surgeon, it was pronounced unsound and returned to him. It was subsequently sold, and, after paying for its keep, Hughes received £22 12*s.* 6*d.* After deducting various expenses, they calculated that £1 10*s.* only was due to plaintiff, which had been paid into court. Mr. Adams first called defendant,

Thomas Hughes, who deposed he lived at Tyddyn du, near Carnarvon. Knew plaintiff, who lived in Anglesea. Went to him on the 1st of September to buy a horse. It was a good one to look at. Plaintiff had sent for him. Asked plaintiff if the horse was sound, and he said, "Yes, as sound as any horse ever was." Told plaintiff he was going to buy the horse for his brother. Plaintiff had previously told him the price, and witness said he would have nothing to do with the horse at that price, unless it was sound. He did not say, "Am wn i." Defendant would not have taken it if he had said that. Took the horse to Liverpool on the following Friday, and agreed to sell it to a gentleman; but it was taken to Mr. Heyes, and returned by him as unsound. He sent by post that day to inform Griffiths. Knew a man named John Roberts. He was in Liverpool with defendant when the horse was examined by Mr. Heyes. Sent two or three letters to Griffiths, but got no answer. Sold the horse on the 9th of September. Was at Llangefni fair on the 15th, and sent Roberts to Griffiths. Did not go with him; did not see them together. Sent the horse to Mrs. Wilson's livery stables, and it was subsequently sent to Lucas's and sold. Witness received from Mrs. Wilson £22 12*s.* 6*d.* He had paid £1 8*s.* 10*d.* into the court. [Mr. Adams had erroneously stated £1 10*s.*] He had incurred various expenses in taking the horse to Liverpool, and paid 10*s.* 6*d.* to the veterinary surgeon, amounting in all to £1 8*s.*; and, in addition to this, he had to pay for its keep for three nights.

Cross-examined—Had been accustomed for some years occasionally to buy horses to sell again. It was on the 1st of September he went to plaintiff's. His brother had been there a year before, trying to buy the horse; witness was there with him. On his oath, Griffiths did not say, "For what I have seen or known, the horse is sound." Did not see John Roberts and plaintiff together at Llangefni fair. John Roberts was not his servant, and never helped to buy either horses, pigs, or sheep. Defendant could not say whether his brother was in the fair. He had no servant with him at the fair.

Gilbert Heyes—Was a veterinary surgeon in practice in Liverpool. Examined a roan entire horse in the early part of September, and found him unsound. He was suffering from contraction of the tendons of the hind legs, or what would be commonly called "walking on his toes." Must have suffered from this for at least a month. That contraction might be brought on by over-work. It certainly rendered a horse less valuable. Both legs were bad, but one was worse than the other. Witness rejected him because he thought he was not fit for the ordinary work of a cart-horse. Saw him yesterday, and again this morning. Found him worse than he was when he saw him first.

Cross-examined—Never saw a horse in that state from its birth. Would not venture to say this horse was not so when foaled. It would affect a horse's health and constitution when he had to work. It might be detected by the eye of a man who knew anything of veterinary surgery. Witness thought the horse was bought by a Mr. Kirkpatrick, a carto-wner. Saw the horse that morning in the chains of a cart.

By Mr. Adams.—The disease was of such a nature that a person would not discover it if a horse was standing still in a fair.

John Ellis—Was a veterinary surgeon in Liverpool. Had examined the horse in the presence of John Roberts; found him to be unsound. Witness's description of the unsoundness was essentially the same as that of the previous witness. He examined the horse on Monday last; thought the defect might have existed for five or six months, perhaps more.

Cross-examined.—He was perceptibly lame when he moved. It was a defect which any person might discover. It would be perceptible to anybody who was the slightest judge of horses. If the tendons were affected, but not sufficiently to cause lameness, it might be seen if the horse were standing on a level surface, but not in a field or on a muddy road. In a bricked stable it would be perceptible. He never saw a horse with a contraction of that kind at birth.

By Mr. Adams.—He thought the deformity might not be apparent to an inexperienced purchaser of horses.

By the Judge.—It becomes more apparent with work. He thought the horse might be worth from £22 to £23 at the time of the purchase.

Mr. Heyes being recalled, said he thought it would be worth 20 guineas.

John Roberts.—Remembered Hughes bringing a horse to Liverpool. The person who bought the horse took it to Mr. Heyes. Knew it was the horse Hughes had from Griffiths. Remembered going to Griffiths about it at Llangefni. Was sent to him by Thomas Hughes. Griffiths told him the horse was sound when he sold him, and that he was sound then. Witness told Griffiths he had been informed by Thomas Hughes that he bought the horse with a warranty by word of mouth. Griffiths in reply to that said, "Yes, he is sound." He did not say anything about "as far as he knew." He said that Thomas Hughes had seen the horse himself. Witness asked him if he would take the horse back, and he said he would if he was in the same condition as when he sold him.

Cross-examined.—Thomas Hughes sold the horse himself in Liverpool. Sold it for £36, and two horses to boot. After being returned by Gilbert Heyes, he was sold at Lucas's for £28 10*s.*, he thought. The money was received by Mrs. Wilson's manager. Had known this horse for twelve months; he appeared different when brought to Liverpool from what he was when witness saw him before. He could not put his heel on the ground.

Mr. Powell ably addressed the court, after which his Honour gave a verdict for defendant, but deducting the fee of 10*s.* 6*d.* paid to Mr. Heyes. The expenses also of one of the gentlemen brought from Liverpool were waived by consent of defendant's advocate.

HORRIBLE CRUELTY TO A HORSE.

A CHARGE, involving the perpetration of great cruelty to a horse, has just been brought before Mr. Delmour, chairman, and a bench of magistrates, at the county police-court, Canterbury. The defendant was named George O. Groombridge, carrying on business as a carman, and the prosecution was instituted by the Royal Society for the Prevention of Cruelty to Animals. Mr. Love, from the office of the Royal Society, made a statement, which was borne out by the testimony of several witnesses, to the effect that on the 22nd of December the defendant attached a poor, miserable, worn-out horse to a waggon heavily laden with timber, which he intended to draw to a town some miles distant. The horse had not proceeded more than 300 yards from the defendant's premises when it came to a standstill, the road being rather hilly, and from sheer weakness and debility was unable to proceed further. The defendant thereupon went back to his premises, obtained a large bundle of straw, and having placed it under the belly of the horse nearest to its hinder parts, he set fire to it. The flames ascended to the

body of the horse, and the fire burnt fiercely, whilst the defendant stood by, coolly looking on. The unfortunate animal was incapable of moving, from the heavy weight which was behind it, and the result was that the horse was burnt in a horrible manner about the most tender parts of the body. The skin of the belly cracked and blistered up, and the thighs became a mass of running wounds. The defendant afterwards compelled the horse, assisted by a second one, to go through the day's work, and on its return home at night it was placed in the stable and there left uncared for until the following morning, when the defendant's wife gave the wretched animal to a labouring man, with a sum of money, to get rid of it. Subsequently the horse was released from its sufferings by being slaughtered in a knacker's yard in Canterbury. The defendant did not appear personally, but was represented by his mother, who produced a medical certificate to show that the defendant was lying ill at home, and unable to attend, but he was anxious that the case should be heard and settled that day. Stephen Holmes, the man who was asked by the defendant's wife to kill the horse, confirmed the preceding statement. He took the horse to the knacker's yard, and received a shilling from defendant's wife for his trouble. William Fry, a blacksmith, who examined the horse, deposed to the frightful injuries the animal had received. Mr. Love called upon the bench to use the power invested in them by the Act of Parliament, and commit the defendant, who was a man of substance, to prison, without giving him the option of a pecuniary penalty. The magistrates having consulted together, said that, but for the proof given that the defendant was lying now seriously ill, they would have committed him to prison without a fine, for a more cruel case it was not possible to conceive. But, taking into consideration the state of his health, they would inflict the full penalty with costs, amounting to £6 13*s.* 6*d.*, or in default to be committed to prison, with hard labour, for six weeks. The fine was at once paid.

ARMY APPOINTMENTS.

War Office, Pall Mall, *Jan. 2nd*, 1863.

Royal Regiment of Horse Guards.—Vet.-Surg Matthew John Harpley to be Vet.-Surg. of the First Class.

4th Dragoon Guards.—Vet.-Surg. Luke Byrne to be Vet.-Surg. of the First Class.

11th Hussars.—Vet.-Surg. John Ferris, from the 17th Lancers, to be Vet.-Surg., *vice* Paul Anthony, dismissed the service by sentence of a general court-martial.

17th Lancers.—Vet.-Surg. James Lambert, from the Royal Artillery, to be Vet.-Surg., *vice* John Ferris, appointed to the 11th Hussars.

ROYAL ARTILLERY.

To be Veterinary Surgeons of the First Class.

Vet.-Surg. Gabriel I. Rollings; Vet.-Surg. Edwin Harrison.

MILITARY TRAIN.

Vet.-Surg. William Death to be Vet.-Surg. of the First Class.

OBITUARY.

WE have to record the death of an old and much respected member of the profession, Mr. John Kent, of Bristol, who died December 28th, 1862, aged 72.

Mr. Kent was as well known to the members of the legal profession as to those of his own, for the singular interest which he took in all cases of veterinary jurisprudence, there being few, if any, tried in his own or surrounding counties in which his aid was not sought, either as an adviser or as a witness. His taste for this branch of his profession often led to his travelling miles to be present at "a horse cause," and to engage reporters to take full notes of the trial for his use, even if he had little otherwise to do with the case.

It is not improbable that this love of "horse law" had received a strong incentive in his having been called upon, several years since, to defend an action brought against himself for want of professional skill in bleeding a horse *with a lancet*, thereby causing, as was alleged, the death of the animal. The case was tried before the late Mr. Justice Parke and a special jury, and a verdict given in his favour, the judge strongly expressing himself in support of the view taken by the jury. Mr. Kent subsequently published the case in full, in the form of a pamphlet, and thereby brought himself prominently before the horse-owning public.

He was an occasional contributor to our pages, his communications being chiefly, as may be supposed, on his favorite subject of veterinary jurisprudence. His diploma bears date April 13th, 1813, so that at the time of his death he had been nearly fifty years a member of the profession.

Added to this, we have likewise received information of the death of Mr. John Mills Hales, of Oswestry. Mr. Hales was a highly respected member of the profession, and held, among other appointments, at the time of his death, that of Veterinary Surgeon to the North Shropshire Yeomanry Cavalry. His diploma is dated July 16th, 1818.

THE

VETERINARIAN.

VOL. XXXVI. No. 423. MARCH, 1863. Fourth Series. No. 99.

Communications and Cases.

CARCINOMA OF THE INTESTINES AND OTHER ABDOMINAL VISCERA OF A HORSE.

By Professor Varnell, Royal Veterinary College.

In the early part of January, 1863, portions of the intestines and other abdominal viscera of a horse were forwarded to the College for my inspection, by Mr. Henry Shaw, of Sydenham, Surrey. The nature of the disease with which they were affected, and its comparatively rare occurrence, induced me to lay the specimens before the members of the Veterinary Medical Association, by whom they were thought of considerable interest, and elicited a lengthened discussion.

With a view to ascertain the history of this case, I wrote to Mr. Shaw, requesting him to furnish me with a brief outline of the symptoms which had been observed both before and after he had been called upon to attend the horse. The following is his reply:

Sydenham Hill; *January* 6, 1863.

Sir,—The intestines that I sent you were taken from a horse that was fourteen years old. The owner had the animal over nine years, and nothing had been observed to be the matter with him during the whole of this time, until three weeks since, when he experienced a slight attack of influenza. I attended him for it, and he soon got better. On Saturday week my attention was again called to him, and I was informed by the coachman that he had great difficulty in staling. I sent the necessary medicines, and the horse soon obtained relief. On calling the following day, he appeared

to be perfectly well, and the coachman also thought him so, and that it would not be necessary for me to see him again. But in the evening I was again sent for, and when I arrived I found the horse suffering acute abdominal pain. From the symptoms evinced, I came to the conclusion that a calculus existed either in the bladder or intestines. I communicated to the owner my opinion, when he said if there were no hope of an ultimate cure being effected, he would prefer having the horse destroyed, as he was an old favorite of his. This was accordingly done. I forgot to mention that the horse lately took to jibbing. He was a very ravenous feeder, and would not only eat all his litter, but, if left in a loose box, the whole of his fæces.

I remain, Sir,
Your obedient servant,
H. Shaw.

Professor Varnell.

Examination of the morbid parts.—It would have been more satisfactory if Mr. Shaw had sent the whole of the contents of the abdomen, as we should then have been enabled to record more fully the extent of this malignant and insidious disease. The only parts forwarded were the kidneys, pancreas, portions of the ilium, colon, mesentery, and mesocolon, and also a small portion of the liver, with a part of its duct. But I was verbally informed that the whole length of the intestines was more or less affected with this disease. I first examined the outer surface of the ilium, which was very irregular in size, indicating, in some places, impactment to a considerable extent. This was afterwards found not to be the case, as no fæcal matter was met with in its interior. The irregularity of its surface depended upon numerous tumours situated beneath the peritoneal covering of the intestine. Some of these tumours were not larger than a common nut, while others were the size of a hen's egg. Some of them were isolated, while again others were united together. Similar tumours were found to exist above the attached border of the intestine, seemingly following the course of the absorbents of the mesentery as high as its root, at which point I found the mesenteric lymphatic glands to be enormously enlarged.

Examination of the inner surface of the intestine.—To do this effectually, I made a longitudinal section along its free border, through its entire coats. As before stated, the gut contained no ingesta, but its inner surface exhibited marks of extensive disease, and like the outer surface it was uneven from the existence of numerous tumours, which projected inwardly

into the tube. Many of these abnormal growths had ulcerated through the mucous membrane, and discharged from their surfaces a bloody ichorous fluid, which I think must have discoloured the fæcal matter, and I am surprised that this was not observed during the life of the animal. From the way the tumours had become united to each other, it was impossible to determine whether they involved more especially the glandular patches of Peyer or not, but I am inclined to think that these organs were primarily the seat of the disease.

The substance of the coats of the intestines was next examined. —I have already stated that some of these tumours were subperitoneal, and others were beneath the mucous membrane. Occasionally, I found that those, in both situations, had completely collapsed; and that the muscular or middle coat was in consequence entirely displaced. In other places this tissue was only partially removed by the abnormal growth, and here and there the middle coat was considerably thickened by interstitial deposits of a semi-gelatinous consistence.

The portion of the colon which I next examined was, with a slight variation in the situation and size of the tumours, similarly affected to the ilium. The enlarged mesenteric lymphatic glands were softened, and some few of them had ulcerated through the thin peritoneal covering. On making a section through them, a brain-like substance was found in their interior, which to the unaided eye was dissimilar to that forming the substance of the tumours connected with the intestine. Microscopically, however, but little difference was observable in the elements of which they were composed. A portion of either, examined with one quarter inch power, brought to view a quantity of nucleated cells of various sizes. The larger ones, which varied very much in outline, contained a brood of younger cells. Some of these had burst, and yielded up their contents; but I could not discover any fusiform cells. These cells were disseminated in a granular fluid, which was more abundant in the small quantity of material taken from the mesenteric glands than in that taken from the tumours in connection with the intestines.

The head of the pancreas and the biliary duct, as it emerges from the transverse fissure of the liver, were also both affected with this cancerous development; and I have no doubt but that other organs were similarly diseased.

It is surprising to me that the horse retained his condition in the way I was informed he had; and this even up to the time he was destroyed. I should have expected, that if the

chyle had been even properly formed, it would, in its course through the lacteal vessels and their glands, before reaching the receptaculum chyli, have been either arrested in its course, deteriorated in its quality, or its perfect elaboration interfered with, and the blood thereby deprived of its due supply of renovating material. This, however, could not have been the case; at any rate, not to an extent materially to interfere with assimilation.

The symptoms observed by Mr. Shaw were certainly those diagnostic of abdominal pain, and which I can understand, now that I have seen the interior of the intestines, may have been caused by temporary impactment of ingesta in the course of the tube; for its calibre in some parts was greatly constricted, arising from the presence of the abnormal growths before alluded to. The inordinate appetite of the horse, and his propensity to eat his bedding, and even his own fæces, should nothing else be within his reach, are as difficult to account for as his remaining in good condition while labouring under such extensive disease as that of which I have attempted a description.

TREATMENT OF COLIC, &c.

By Thomas Greaves, M.R.C.V.S., Manchester.

I feel an irresistible inclination impelling me to make a few remarks upon the above very interesting and deeply important subject; one which has been so ably handled by Professor Brown in the pages of the *Veterinarian*, and by Mr. Joseph Gamgee, senr., in the September number of the *Edinburgh Veterinary Review*, and now again in this month's *Review*, in reply to "Argus" in last month's *Veterinarian*.

It is a subject I have always taken a lively interest in, and on it an essay was read by me before the members of the Veterinary Medical Association of London, Jan. 26th, 1841. I may also add, that for more than twenty-eight years I have daily bestowed much attention to these kind of cases, and only last week I had one of more than ordinary interest under treatment; in fact, it was this case that finally decided me to make the following comments.

The case adverted to was a cart-horse, five years old. He was brought to my infirmary on Sunday morning, very weak, and said to have been in pain the whole of the preceding

night. The pain did not seem very severe, but was a dull, continuous, obstinate pain, and the pulse was but very little disturbed. An ordinary gripe-drink was administered to him, which apparently gave some relief, but after a few hours the pain returned, when another draught, followed by an enema, relieved him for about eighteen hours, when the pain again returned. Another draught was now given, increased in strength, and another glyster, and his abdomen was well stimulated with mustard. The pains not subsiding, he was bled freely, eight quarts being abstracted, and a physic-ball, containing six drachms of Barbadoes aloes, given. The pain continued, although at no time very severe, except once, for over 144 hours, when death put an end to his sufferings.

During this time he had had his abdomen frequently stimulated with mustard liniment, increased in its potency by adding to it Ol. Terebinthinæ et Liq. Ammoniæ Fortis. At times, too, his abdomen was well fomented with a horse-cloth wrung out of nearly boiling water and applied every ten minutes for two hours at a time; frequently enemas of warm water were thrown up, and tobacco-smoke as frequently and plentifully injected by means of Read's pump. In the way of medicines, he had given to him Barbadoes Aloes, six drachms; Croton Farina, two drachms; Calomel, four drachms; Linseed Oil, five quarts; Powdered Opium, four drachms; Tincture Opium, ten ozs.; Tincture of Pimento, ten ozs.; Spt. Ether-nitr., ten ozs.; Liq. Ammoniæ Fortis, two ozs., &c., &c., and was allowed to sip water, about a quart or so, every hour. He partook of no food during the whole time of his illness; his bowels never responded; there was no perceptible tympanitis, and I occasionally examined him *per rectum*, to satisfy myself as to the state of the bladder, when I could distinctly feel a large mass of ingesta beyond my reach: he urinated occasionally and naturally.

During the time the above case was under treatment another case of colic came in, the agonising paroxysms of which, for five or six hours, were twenty times more severe than was the pain of the above case at any time during his illness. But these pains, intensified as they were, entirely succumbed to two gripe-drinks, bleeding, mustard applications, hot fomentations, glystering, &c.

REMARKS ON TREATMENT.

Medicine.—Mr. Gamgee says he gives Cape or Socotrine Aloes. "Argus" administers Oil, Tinctura Opii and Ether. Sulph. I admire Mr. Gamgee's candour, and am much

pleased with the confidence he expresses in aloes as an antispasmodic, nor would I say one word to weaken that expression of confidence, but I must frankly confess that I have not been near to the same extent so successful in these cases as Mr. Gamgee, when he says, "he has not lost a single horse by colic, or other acute intestinal affection, during thirty-two years, when his instructions have been properly attended to." But if we mean to keep pace with the times, and wish to progress with the spirit of the age, we dare not fly in the face of facts. Mr. Gamgee places his dependence upon aloes; I place mine upon Liq. Ammoniæ Fortis, given in half-drachm doses in a pint of warm ale or water. If my case prove a protracted one, I increase the dose to one drachm, always being very particular in the measuring of it, and shaking it well up whilst giving it. I believe its action to be almost electrical, and that it is the finest antispasmodic we possess.

Glysters.—I possess one of Mr. Joseph Gamgee's enema funnel-tubes, and have much pleasure in bearing my testimony to its simplicity and great utility. It can accomplish everything any other glyster instrument can do. I fully coincide with him that large quantities of fluid are very objectionable, and also that force is injurious. I would rather pass the injection gently in, just as the rectum and anus are retracting. The glyster then appears to be sucked in, and I believe it can pass up the whole length of the rectum; but I also hold in very high esteem the tobacco-smoke, exhibited by means of Read's pump.

External applications.—I differ with Mr. Gamgee on this point of treatment. I am quite satisfied of the great benefit that often results from mustard applications in abdominal affections, and I have likewise the very highest opinion of hot fomentations.

Bleeding.—It is the custom in this part of the country to bleed in cases of colic and enteritis, and, although I am averse to bloodletting in my general practice, still I always have recourse to it in colic, when I find that other treatment fails to give relief.

CONCLUDING REMARKS.

I particularly wish to call attention to two points of consideration in the case I have described above. The one is the length of time the animal was ill, and the other the cause of death; to be followed by sundry suggestions I am about to make to meet such-like cases.

The *post-mortem* examination disclosed the following facts, viz.: inflammation, but not of a severe character, in portions of the small intestines; the contents of the stomach, small and large bowels, all in a semi-fluid state, and large quantities of it; but just as the colon terminates in the rectum, there was a large mass of unsoftened feculent matter impacted; more than a large bucketful, forming a complete obstruction. There was also considerable disease in the liver, probably of long standing. Now the point I am anxious to call attention to is the situation where the stoppage existed. The rectum was perfectly empty, and if any instrument were invented, or any means could have been had recourse to, so as to extract this mass, or to have injected a fluid into it to soften it, this horse's life would have been saved. It will be borne in mind, that all physiologists agree in opinion that little or no secretion takes place in the colon, and my experience has proved, in great numbers of *post-mortem* examinations, that obstructions at this part of the intestinal canal are frequent cause of death. Now it has often occurred to me, and I feel fully persuaded, that an instrument could be formed to overcome this difficulty. The want of such an instrument never stood out more forcibly before me than in this case; there was I, and there was my patient lingering on and on, day after day, he dying before my eyes, giving me ample time to think, and think again, for whole days and nights, and yet I was unable to save him.

I think I can in my mind's eye see a number of instruments differently contrived, and constructed on different principles, each or any of which could be made to accomplish this purpose. When I read of Dr. Nelaton, that eminent and ingenious French surgeon of European reputation, contriving that delicate and beautiful instrument to ascertain whether it was lead or bone that existed at the extreme end of the deep dark sinus in General Garibaldi's wounded ancle, I say, surely Englishmen can, if they will only put their wits to work, contrive to make this instrument, whose usefulness would have infinitely greater scope; would be of more vital importance, and its value in practice incalculable. But, perhaps, some of my readers are ready to exclaim, Aye, this writer is one of those wild enthusiasts, a day-dreamer, a visionary theorist, one who has got hold of an impracticable notion. Of such an one I would ask, Have you ever in your life given ten minutes' deep, serious, earnest consideration to this subject? I would further ask, Do you know that the entrance into the colon is only twenty-two inches from the anus in a straight line through the interior of the rectum?

—that is, in an ordinary sized horse—and that an ordinary sized man's arm can reach thirty-two inches? And further, I would tell him that I have, in the dead subject, drawn upon a man's hand and arm, and also upon a beesom stale, each of which had been passed up the rectum, the whole of that gut, three and a half yards long, like unto and in the same manner as I could draw a loose sleeve over the arm, and in this case the forefingers could reach into the colon. I encountered no difficulty whatever in doing this, for it will be remembered that the rectum floats very loose from the fan-like mesentery; but the colon has a closer attachment. Now does the idea look any more feasible? and if it does, will any one co-operate with me in making the attempt to accomplish the object in view?

OBSERVATIONS ON "SOUNDNESS."

By R. H. Dyer, M.R.C.V.S., Waterford.

(*Continued from p.* 75.)

It may be asked, why crib-biting was considered at so early a stage of these observations? Perhaps, too, it will be argued by some that the disease, or habit, as it has been, I think, improperly designated, would more consistently have occupied a position in the catalogue of diseases of the digestive organs. My reason is obvious. These remarks not being intended to supply or take the place of a work on pathology, it is at that stage of our examination as to soundness that our attention is more particularly arrested by it. The same remarks are applicable to the next inquiry we shall make—viz., into the state of the *nasal cavities*. It is needless to call attention to the importance of this subject, as it will be anticipated that that loathsome disease, glanders, will be hinted at.

The salivary glands, and the Schneiderian membrane, are so intimately concerned, the one with the other, in these examinations, that I shall purposely connect them.

It may assist us in our inquiry if we take a glance at the structure and function of these parts. The nose is divisible into hard and soft parts. The former, are the bones and cartilages; the latter, the lining membrane of the various cavities and passages. These cavities are denominated the nasal fossæ, and the different sinuses. There are five carti-

lages belonging to the nose. The septum nasi is that which divides the two sides. Both sides are covered with mucous membrane. There are what have been termed true and false nostrils: the true are the larger, and which always are open; the false nostrils are small pouches, or *cul-de-sacs*, situated internally above the true nostrils. They are formed of integument, which is exceedingly thin and soft. The Schneiderian membrane is, by some anatomists, called the pituitary membrane, from the nature of its secretion. It was formerly believed that this secretion proceeded from the brain, until "Schneider" demonstrated and made known to the world that the secretion proceeded from the mucous membrane. It is closely attached to the periosteum, to the cartilages, and, in short, to all the passages and cavities of the nasal fossæ; it is very thick, very vascular, and distinguished for its olfactory papillæ; it is strictly a mucous membrane, is pink in colour, but subject to change by cold, which is often produced by atmospheric influence. From the nasal fossæ it may be traced through the nasal duct to the conjunctiva, along the Eustachian tubes to the pharynx and mouth, and from thence through the lungs and alimentary canal. It is very smooth on its external surface; the lateral nasal artery, the facial, and the palato-maxillary furnish abundance of blood for its secretion; the first and fifth pair of nerves supply it with all it requires from this source. The olfactory nerves appear to be very sensitive; they ramify over every part of the mucous membrane, by which the horse is endowed, as it were, with the power of touch. Smelling, to the horse, is what touch is to man.

When we contemplate the vastness of the mucous surfaces found in the equine race, more especially in the air-passages, we need wonder but little at finding a considerable quantity of fluid secreted in *diseases* of this membrane. It has been calculated that the number of air-cells in the human lungs amounts to *six hundred millions*. If this be an approximation to truth, and if the same might be compared with the increased volume of lungs in the horse, it goes far beyond my comprehension to imagine the extent of surface of the mucous membrane in our patients.

I am free to admit most of us take but a hasty glance at this membrane when called to examine a horse as to soundness. If any quantity of discharge is found in either nostril, it is our duty to look closely at it; also to the submaxillary glands, and to the peculiarity of the cough, should one be present. I am anxious to impress this upon the minds of your readers, as I am convinced more animals are passed as

sound ones than ought to be. It may be in the recollection of some of the readers of the *Veterinarian* that I was interested in an experiment which was instituted for the purpose of ascertaining if the mucous discharge from the left nostril of a pony had the power of propagating disease. This was done, in consequence of the owner of the pony having lost a young and valuable horse from glanders. The case is recorded by me in the *Veterinarian*, vol. xxx, page 380. I repeat, we cannot scrutinise too closely any secretion from the Schneiderian membrane when met with, and particularly if we find the horse *free* from cough.

The diseases of this part of the air-passages are not numerous; and it is probable we shall have to consider only a portion of them. I shall, therefore, in this paper, merely refer to two or three—viz., catarrh, nasal gleet, and glanders. A common cold, as it is termed, as a general rule, soon runs its course. It frequently is removed by a little good nursing, but more frequently the horse is left for nature's cure. There are cases, however, of simple catarrh which leave behind them something that is annoying to the practitioner, as well as the owner of the horse. I allude to whistling.

Polypus is a disease so little known with us, that it needs no notice from me.

Nasal gleet is, I think, a disease which is thought but little about by horsekeepers generally. It is, in consequence of its being considered of *no* importance, nearly as dangerous, if not more so, than glanders itself, since in the one case no person is careful, and in the other case *all* are. An animal having a discharge from the left nostril, however small in quantity, and of long standing, should at all times be critically examined, and, if need be, an ass made the subject of experiment from it. My own practice has taught me that these occasional discharges are very serious, and most of them are capable of producing disease. It becomes, consequently, our duty to inquire into the cause of nasal gleet, and to point out any peculiarities which may lead us to safe conclusions in pronouncing an animal to be *sound*.

It is an universally received opinion that that which is called, and which surgeons understand by the term inflammation of the Schneiderian membrane, is the principal cause of nasal discharge. Although it has been argued that this affection is produced *without* inflammation having existed, I am not inclined to believe it. It does not follow that such has *not* existed because the owner or groom has not witnessed it. These attacks are of so mild a form frequently that it

is quite possible we might not be cognisant of the existence of inflammation.

Gleet is supposed to be a disease left by a chronic attack of inflammation of the mucous surfaces, and that aged horses are more susceptible of it than young ones. The *colour* of the membrane is not of that healthy pink; it now assumes a darker, a sort of lead-coloured hue, which must be seen to be thoroughly understood. The discharge is of various consistence, now thick, at another time thin, and so on. It is, however, at that stage of the complaint when the disease is supposed to have been cured, or no disease at all exists, that we are likely to have our attention directed to it; when it is, in fact, what the owner or breeder of the animal would call "nothing." This is the most insidious, and at the same time most dangerous, form of the complaint, and one which requires our best services. I have often failed to detect any alteration of the submaxillary glands in these affections. It is said that if nasal gleet is communicable by means of inoculation, the glands would assume that particular appearance met with in glanders. In the case referred to by me I could not say there was any change discernible in the glands of the pony; the only symptom present was the *altered colour* and appearance of the Schneiderian membrane. I have often observed this membrane to assume a striated aspect, which has induced me to look closely for other symptoms, and such was the case in this instance. A practitioner of veterinary medicine, and a man with a diploma, too, examined the pony referred to—was actually aware of the experiment and its results upon the ass—yet gave a certificate to the effect that the animal was *sound* and *free from disease*, and especially was he free from glanders. I cannot understand how any man can do such extraordinary things as these, if he has a reputation at stake. I can only account for it in one way—viz., such persons as I mentioned never *reflect*, never give themselves any trouble concerning the profession they are members of. With this experience before us, we cannot exercise too much caution in endeavouring to ascertain every particular, and all the symptoms relating to diseases of the membrane of the nose.

It has been said the Schneiderian membrane is very thick; that it lines the cavities of the fossæ; that its colour is of a pinkish hue; that it is influenced greatly by atmospheric air; and it may be added, by the gases found in the stable; also that it secretes mucus, &c. This all *reads* well. How often are we told that this membrane assumes a perfectly healthy appearance, when in fact it is not healthy? Often

it is anything but of a *pink* colour. We are all aware of the susceptibility of the horse to catarrhal affections, and it is not unreasonable to suppose that not only a change of colour, but of its substance also, might and does occur after repeated attacks of catarrh. If we reflect for a moment upon the vast extent of mucous membrane lining the air-passages, we need not be surprised at horses becoming whistlers, wheezers, pipers, high-blowers, bulls, grunters, roarers, &c. The only wonder is, that they escape so frequently.

Nasal gleet sometimes terminates in glanders. Has any veterinary surgeon, when first called to treat a case of nasal gleet, inoculated an animal with the nasal discharge for the purpose of testing its innocuousness? I have never heard of its being done. In that case referred to, I succeeded in producing glanders. This is a great fact. Who can say that many cases of gleet, in some particular stages of it, are not capable of propagating disease? I am inclined to think that a lesser number of cases of glanders would be met with, if we would sacrifice an animal occasionally; at all events human life would be spared more frequently than it is. A case was recently recorded of a boy having died of this loathsome complaint; how, or in what manner the disease was contracted, it was not satisfactorily proved. That the boy had had something to do with a horse suffering from glanders there was not a shadow of a doubt; at the same time, evidence was wanting to fix the *receiving* of contagious matter *from the animal in question*. Still, no person can come to any other conclusion than that of the lad having been poisoned with glandered matter. I am therefore of opinion that an animal at the time he is presented for examination having a nasal discharge, with an approach to an *unhealthy* state of mucous membrane, should be *rejected*.

These remarks being so lengthy, will prevent my making any allusion to the diseases of the salivary glands. In my next paper they will come into notice in their proper place under the head "Strangles," when I shall take an opportunity of offering a few more remarks upon glanders.

(*To be continued*

REMARKS ON A CASE OF CALCULI IN THE INTESTINES OF A HORSE, FOLLOWED BY RUPTURE.

By J. C. Broad, M.R.C.V.S., Market Street, Paddington.

Cases of abdominal disturbance in the horse, arising from the presence of calculi, occasionally come under the notice of most veterinary practitioners. In some instances the case is remarkable for its acuteness of attack, and speedy termination in rupture and death; in others it assumes a subacute form, and the case may be a very protracted one, as the following will show.

January 9th my attention was called by Mr. Bosworth, omnibus proprietor, St. John's Wood, to an aged gray gelding, reported to be suffering from cold and loss of appetite. I noticed no marked symptom of illness beyond a general dulness, and the horsekeeper informed me that the animal had shown no indication of pain previous to my visiting him, but he had refused both food and water since the previous evening. I prescribed a draught to be given him, and left another to be administered in the evening.

10th.—Upon making an early call, I observed that the horse was spontaneously purging, and he seemed very uneasy; he had also continued to refuse his food, and drank but very little. I at once ordered his removal to the infirmary.

On the 11th, 12th, and 13th, the purging to a small extent continued, but was accompanied with only slight pain; he was mostly lying down, and when in that position generally very quiet; when up, he was constantly walking round his box; he had taken a little gruel only since his admission.

14th.—No improvement.

15th and 16th.—The pain has evidently increased, and no dung has been passed since the 14th; his urine is voided in small quantities, frequently, and of a very dark colour; no marked distension of bowels exists.

Applied mustard freely to the surface of the abdomen, and gave some laxative medicine, with frequent injections of warm water.

17th.—The symptoms continue nearly the same, except that the animal is not in quite so much pain.

18th.—Purging recommenced; fæces passed in small quantities, and exceedingly offensive. This continued till the 24th,

and from this date the bowels ceased to act; he died February 8th, thirty days from that on which he was first attacked.

A very slight distension of the bowels was first observed about February 1st, and this gradually increased till his death; but the symptoms were never severe. He partook of very little food, and also drank but little throughout the attack. The food offered him consisted principally of mashes and gruel. He was never observed to paw his litter, a symptom most prominent, and scarcely ever absent in cases of abdominal disturbance arising from the existence of calculi.

I may here remark that I had communicated my opinion to the owner, for upwards of a fortnight previous to death, that I suspected the existence of a calculus.

As may be supposed, the patient had fallen off considerably in condition. His death did not appear to be attended by any increase of suffering.

Post-mortem examination.—On laying open the abdomen the viscera were found covered with ingesta; the intestines exhibited but little inflammation, excepting a portion of the single colon, in which a rupture had taken place, and a calculus of the oat-hair description, weighing about four pounds, had escaped into the cavity.

About two thirds of another calculus, of the same description, and of nearly the same size, was impacted in the rectum; the remaining portions were found in the single colon.

The horse had been in his owner's possession for several years, but had not been subject to any attacks of colic.

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 11.)

Poisoning of Heifers with the Woody Nightshade.

In my last communication, after making some general remarks on the poisonous plants, I was about to relate a case of poisoning by the Solanum dulcamara which came under my notice a short time ago. But before doing so, however, I think a brief description of its botanical characters will be of interest to the profession.

The *Solanum dulcamara* (*woody nightshade*, or *bitter-sweet*), belongs to the class of *Exogens*, the sub-class *Corolliflorœ* (flowers furnished with both calyx and corolla; the latter consisting of united petals), and to the very important natural order Solanacea, which may be recognised by the following characters:—

Solanaceæ (*nightshades*), *calyx* five-parted, persistent, inferior; *corolla* monopetalous, hypogynous; the limb five-cleft regular, or somewhat unequal, in *æstivation* plaited or imbricated; *stamens* inserted upon the corolla, as many as the segments of the limb, with which they are alternate; *anthers* bursting longitudinally, rarely by pores at the apex;—OVARY two-celled, with two polyspermous placentæ; *style* continuous; *stigma* simple; *pericarp* with two or four or many cells; either a capsule with a double dissepiment parallel with the valves, or a berry with the placenta adhering to the dissepiment; *seeds* numerous; *herbaceous* plants or *shrubs; leaves* alternate, undivided, or lobed, sometimes collateral; the floral ones sometimes double, and placed near each other; *inflorescence* variable, often out of the axil; the *pedicels* without bracts. "So far as the European Flora is concerned, this order is sufficiently characterised by its superior many-seeded ovary, axile placenta, and regular flowers, and by having the same number of stamens as there are lobes to the corolla, upon the side of which they grow." (*Lindley.*)

Good illustrations of the order may be seen in the *Solanum dulcamara*, *Atropa belladonna*, and the *Nicotiana tabacum*.

To this very natural order I would particularly direct attention, inasmuch as many plants which are likely to come under our notice belong to it. The order is an extensive one, and most of the plants are natives of tropical regions. "About twenty hardy ligneous species, upwards of 200 hardy herbaceous species, about 100 greenhouse, and 150 hothouse species exist at present in Britain." The leaves of nearly all the species have a dark green colour, and many of them give out a peculiar odour; the juices of many are powerfully narcotic; the fruit of a few is violently pungent; the fruit of two or three others esculent, and the tuberous roots of one are the well-known potato.

Among the plants which are used in medicine will be found the *Atropa belladonna* (*deadly nightshade*); *Hyoscyamus niger* (*henbane*); *Nicotiana tabacum* (*tobacco*); those used as food or esculents, the *Solanum tuberosum* (*potato*); the *Capsicum annuum* (*capsicum*), and the *Solanum lycopersicum* (*love apple, tomato*). Others also are much prized for their floral beauty, such as the *Petunias*, the *Brugmansias*, &c., &c. All more

or less possess narcotic principles, and in some these are associated with an essential oil.

Solanum dulcamara (*woody nightshade*, or *bitter-sweet*). "Stem woody, of a bluish colour, without thorns, twining in hedges, and attaining a height of from three to twelve feet, emitting when bruised a disagreeable odour; leaves somewhat ovate, smooth, and entire at the margins; flowers of a beautiful violet or purple colour; *calyx* five-parted, permanent; *corolla* five-parted, rotate, purple, with two green spots at the base of each segment. Fruit or berry, oblong-oval, red in colour and juicy, many-seeded."

This, one of the most beautiful of our native plants, is found growing in woods and moist places in most parts of the country. It flowers through June and July, and ripens its berries in August. "The leaves are narcotic, producing nausea and giddiness when eaten, and the fruit is equally deleterious. The young branches and root are employed in medicine as a sudorific." There is another variety, viz., the *Solanum nigrum* (the *black* or *garden nightshade*), found growing in waste places, and differs from the *Solanum dulcamara*, by having white flowers, and the fruit being a black instead of a red berry. Both owe their activity as a poison to an alkaloid named *Solania*, which has been described as a "narcotico-acrid (cerebro-spinal) poison."

The following tests are copied from Dr. Taylor's work on poisons, a work which none of us should be without. "Chromic acid gives a sky-blue colour, passing to a green;—concentrated sulphuric acid produces an orange-red colour, passing through a yellow to a violet. Nitric acid, with the vapour of ammonia, produces a rose-red colour. The solution is not precipitated by chloride of platina or iodide of potassium.

The following case of poisoning of two heifers by the *Solanum dulcamara* came under my own observation during last summer. The animals in question were red and white coloured, about a year and a half old, belonging to Mr. Wrighton of this town; and which, with two other white coloured animals a little older, from another part of the farm, were on the same day turned into a fresh pasture. The herbage was somewhat scanty, but all the animals appeared to go on well for the first few days. In a short time, however, the owner noticed one of the red and white beasts to appear dull and unwell. He gave half a pound of the sulphate of soda, but the animal appearing no better he repeated it the next day. On the following day he found the other red and white beast to be attacked in the same way; and on

the afternoon of June 10th, I was requested to see them. I found the animal first taken ill standing by herself, a considerable distance from the other beasts, and exhibiting the following symptoms: a wild and somewhat vacant look, the pupils of both eyes being much dilated; a quantity of frothy saliva hanging about the lips; breathing not increased, but heavy in character; pulse almost imperceptible, being very much oppressed; bowels relaxed; and the animal frequently grating her teeth. The other beast, which had been more recently attacked, I found with the other two at the further end of the field, and when approached she tried to gallop away with them, but reeled and staggered about, and, when examined, exhibited in a milder form all the symptoms above described as existing in the beast that was first taken ill. I had her placed under a shed, and told the attendant to bring the one first affected also to the shed. With some difficulty she was made to walk slowly down the field, but had gone only a short distance when she suddenly turned round and commenced to run backwards, tossing her head about in the wildest manner; again repeating this strange proceeding after walking a short way. I ordered a strong liniment of turpentine and croton to be applied to the back of the head, and along the spine, and gave a powerful stimulant to each animal, consisting of Spt. Ammon. Arom. et Spt. Ether. Nit., and in two hours afterwards administered half a pound of sulphate of magnesia. On the following morning I found the symptoms in both animals were worse than on the previous night; both being down and unable to get up, and quite unconscious of all around them. During the night the bowels had acted freely, the fæces being almost black in colour, and in the animal first attacked they were streaked with blood. I next examined the two other beasts, and found them apparently in health. Being struck with the peculiarity of the symptoms, &c., I was induced to ask the owner if any plant likely to be injurious was known to grow in the field? He replied in the negative, but said he had noticed these two fellow-beasts frequently eating something out of a ditch on one side of the field. Upon examination I found the ditch to be covered with thorns, and growing through and entwining amongst them in great abundance and luxuriance, the *Solanum dulcamara*, which at this particular period, when just about to blossom, is in its most poisonous state. I also observed that considerable quantities of the plant, in different parts, had been recently bitten off by the animals; and as a careful examination of the other plants growing in the field gave no

indication of any of them being injurious, I came to the conclusion that the heifers were suffering from the effects of this poison.

Both lingered on for several days, gradually getting worse, and as I was anxious to make a *post-mortem* examination, the one first attacked was killed. The following appearances presented themselves: the contents of the thorax perfectly healthy, and also all the abdominal viscera, with the exception of the colon, the internal surface of which had numerous patches on it, about the size of a crown-piece, and of a dark-red colour. The stomachs contained no solid ingesta, only the gruel which had been administered to the animal previous to its death; the membranes of the brain, and the brain itself, were very much congested, all the vessels being distended with dark-coloured blood. The other animal died the next day; but being from home I had no opportunity of making a *post-mortem* examination. Upon my pointing out the cause of the illness of the two animals to the owner, he at once removed the other two beasts from the field until the ditch had been cleaned out. They were then again placed in the field, and remained there for some considerable time without any injury resulting.

(*To be continued.*)

ON DISEASES OF THE BRAIN AND HEART IN THE HORSE.

By "Quæsitor."

I am very glad that the cases published in the last month's number of the *Veterinarian* have given you an opportunity of drawing the attention of veterinary surgeons to two forms of disease in the horse, the early stages of which, as regards their diagnosis, are involved in considerable obscurity. I allude, of course, to diseases of the brain and heart. Now that the subject has once been mooted, I hope that it will not be allowed to drop until we have arrived at some data by which, at least, we may be able with greater certainty to diagnose them. As regards treatment, our present knowledge will, I fear, not avail us much. My own opinion is, that in either case the malady has made great progress before our attention is drawn to it. With reference to those diseases of the brain in which, after death, we find alteration of its substance (I do not include that malady commonly called

Megrims in the category), the first symptom that calls for our assistance is, that the animal, on being put to work, is observed to answer to the bit less cheerfully than usual; goes sluggishly in his work, and otherwise appears stupid. This state of things is followed by violence, if the horse is thwarted or put under restraint. The propensity, which is often seen, of turning to one side only, is a very curious and a marked symptom. In a case which came under my notice last autumn, the animal, except when feeding, constantly walked around and around his box in the same direction for some weeks, until he had formed quite a track, like that of a mill-horse. A few days before he was destroyed he unaccountably continued his peregrinations in the reverse direction.

This horse was ordered to be destroyed with chloroform, but as he took a very large quantity without the usual effect, his death was accelerated by opening the carotid artery.

The *post-mortem* examination presented extensive absorption of the substance of the brain, its cavities contained a large quantity of fluid, and the whole course of the spinal cord was also implicated, as shown by distension with fluid of the theca, and softening of the medulla. Yet there was no symptom of paralysis, which to me appears very singular.

A case of heart disease, which I had an opportunity of watching, also presented itself a few days since. The subject of it was a chestnut mare, in good condition, purchased in Ireland as a hunter. Soon after she had changed hands she was found to be lame, and was put under treatment. The mare got better, but the owner being undecided as to whether or no he should keep her, she was not put to work. I should state, that from the first the animal had a cough, which, however, appeared to yield to the measures adopted for its removal, and she was exercised in the usual way, for about an hour daily, until one morning she was reported to be off her feed, and she was treated for an attack of bronchitis with fever. The case from the first did not progress satisfactorily. The appetite was very capricious; at times the animal would feed tolerably well, at others not at all. The course of the spine was now observed to be intensely hot, and the animal apparently suffering from great prostration of strength, constantly getting up and down, and, in fact, showing every symptom of acute rheumatism. The cough was very peculiar, at times amounting almost to a shriek. Then it was that disease of the heart was suspected. The pulse became very low and indistinct; the lungs were congested, but there was no injection of the conjunctival membrane, nor any signs of hydrothorax. She drank large quantities of arrowroot gruel

with great avidity; the alvine evacuations were scanty but otherwise natural; the legs warm, but ears cold. She died apparently in great agony within a week from the commencement of the attack. A *post-mortem* examination was made, when the abdominal viscera were found to be healthy; the lungs congested; heart of the natural size, but pericardial sac slightly distended with fluid; the walls of heart softened, and the right ventricle contained a mass of lymph weighing about two pounds. How long might this state of things have existed?

CREASOTE IN NASAL GLEET.

By Z. Z.

The following appears a somewhat unusual case, and if you think it worth inserting in the *Veterinarian* you are welcome so to do.

A black mare, six years old, was sent to me at the beginning of last January, presenting symptoms resembling glanders, viz., there was a discharge of glairy matter from the off nostril, unaccompanied with fœtor; also an enlargement of the near submaxillary gland.

This discharge, I may mention, had, as I was informed, existed about three months previous to the animal being sent to me. For the first month I gave Cupri Sulphas, ʒij, daily. This, however, although it improved the animal's general health, caused no alteration of the gleet. I therefore resolved to trephine and insert a seton. This was done, and the latter kept in for nearly two months, but still the discharge was in no way abated. I then resolved to try arsenious acid, which was administered in doses of from five to ten grains daily for four weeks, when the animal's health began to suffer from symptoms of gastritis occasionally appearing. I discontinued these measures in consequence, and three weeks were allowed to elapse without any medicine being given, the gleet continuing neither better nor worse during the time, except that it became fetid and very offensive. Hardly knowing what to do with the case, I resolved to speculate a little, and with this intention I compounded a ball containing Creasote, ʒij, Pulv. Gentian., q. s. This was given daily for three weeks, but no improvement was noticed to have taken place. This, too, was discontinued, and after the lapse of a week the following made use of: forty drops

of Acid. Sulph. and ʒij of Creasote were made into a ball and given daily. Strange to say, that in twelve days a sensible diminution of the discharge was perceptible, and it continued to decrease until when twenty-four balls had been given it ceased entirely, nor has it reappeared up to the time of my writing.

I shall not venture to speculate on this case, but leave it to others to form their own theory and opinion. It shows us that *Nil desperandum* should be our motto, even though we may have exhausted all the ordinary means. Whether it was nature or the medicine that accomplished the cure, I know not; but it is certainly a little remarkable that the cessation of the discharge occurred after the administration of this compound.

[Creasote has been found to lessen the discharge from mucous surfaces, especially those connected with the respiratory organs, and glanders in the human subject has yielded to it. A trial of it has been elsewhere suggested for this disease in the horse.

We are not prepared to advocate the combination of Sulphuric Acid with it, because they are not compatible; yet this, too, is a powerful tonic and astringent to mucous membranes. Something, perhaps, may be said in reference to the mode of combination.]

CASE OF FRACTURE OF THE OS METACARPI MAGNUM IN A COW.

By John D. Overed, Student, Royal Veterinary College.

On the 29th of September, 1862, I was requested to visit a valuable young short-horn cow, the property of Mr. Joseph Lynes, Blofield. She was said to be suffering from severe lameness in the off fore leg, and that she could not be removed from the field to the farmyard, a distance of about four furlongs, in order to be milked; a great inconvenience, as she was in full profit at the time.

Being at home when the messenger arrived, I at once returned with him to the field in which the animal was placed, and upon making an examination of the limb, my suspicions formed upon the first sight of the animal were fully confirmed, and I at once detected a transverse fracture of the large metacarpal bone, about two inches below the carpo-

metacarpal articulation; which fact I made known to the owner, who was present, and he being unwilling to have the cow destroyed, I decided to treat the case with a view to effect a recovery, a result which I did not despair of; on the contrary I expressed a favorable opinion, and the sequel proved my prognosis to be correct.

The supposed *cause* of the fracture was a kick from a horse, as there were several confined in the same field with the cows; which I considered very probable, although there was no lesion of the integuments.

The *symptoms* were those indicative of fracture, viz., the leg pendulous, slightly distorted, the toe being turned a little outwards, convulsive twitchings of the muscles above, and swelling below the carpus from extravasation, with a total inability to support weight, and distinct crepitus upon manipulation.

Treatment.—Having secured the patient, I proceeded to replace the limb in its proper position, next I applied an adhesive plaister around and for some distance above and below the fracture. I then padded the leg with tow, and upon it placed ordinary pasteboard splints, moulded while moist to the proper form, securing the whole by retentive bandages, from near the elbow above down to the foot below. This I succeeded in doing to my satisfaction, and as the constitutional disturbance was not great, the excretions also being in a normal condition, I deemed it advisable not to risk displacement of the bones, by attempting the exhibition of any medicine internally, contenting myself with ordering such food as was easy of digestion, and calculated to maintain the alvine evacuations in a favorable condition. I also ordered the patient to be kept quiet, and not to be disturbed by any one except the man who was accustomed to feed her.

I watched the case, and from the second to the fourth day much pain was evinced; but as this was to be expected, I did not give any medicine nor loosen the bandages. After this time the pain was not so acute, and the cow improved daily up to the time of my leaving home to resume my studies at the College, which was a fortnight after the accident had occurred.

Upon returning to Norfolk to spend the Christmas vacation, I was informed that the animal had regained the use of the limb, which was not in the least distorted, and, in short, a perfect recovery had taken place in fourteen weeks, a result equally gratifying to the owner and to myself, and at the same time illustrating in a remarkable manner the power of the *vis medicatrix naturæ* in cases of fracture.

ON THE ADMINISTRATION OF MEDICINES TO SHEEP.

By J. P. Berry, Student, Royal Veterinary College.

The above subject is of sufficient importance to engage the attention of veterinary surgeons, since a difficulty is often experienced in giving draughts to sheep and lambs, and fatal results often follow their exhibition by ignorant persons.

The difficulty alluded to does not arise from peculiarities of anatomical structure, but from restlessness of the animal, and the objectionable construction of the old-fashioned drenching tin, and the common horn, used for this purpose. Suffocation results from attempting hastily to force the liquid down the throat, and at the same time holding the animal's head in a very elevated position; a remark which equally applies to the administration of medicines to pigs.

I have great pleasure therefore in inviting an inspection of an instrument constructed by me for the purpose of obviating the difficulty. It has been used by my employers for more than two years with the happiest results, and, from its cheapness, simplicity, and efficiency, may be esteemed a *desideratum*.

The enclosed sketch of my "Veterinary Medicine Tin" is

of sufficient capacity for the administration of several medicines, but larger ones may be constructed upon the same principle; say, one to hold four ounces for the general administration of medicines, and a larger one to hold ten ounces for dietary purposes.

For the information of your readers, the following brief description of construction, mode of use, and special advantages, may not be unacceptable.

1. The form is like a tobacco-pipe with the bowl closed over. The tube is straight, nine inches in length, half an inch in diameter at its orifice, and one inch in diameter at its base, to which is attached the bowl, in a horizontal position. The bowl is to be made of the size required. The orifice of

the tube must be made smooth by soldering an iron ring on the edge, to prevent abrasions of the mouth.

2. The bowl (only) to be filled by pouring the liquid through a funnel or from a lipped jug into the tube; next, hold the tube in a horizontal position with the bowl suspended, pass the orifice of the tube through the angle of the mouth as far as the last molar tooth, by the side of the tongue; then bring the bowl to the top of the tube by rotating it between the thumb and fingers, and the fluid descends the tube.

3. The following appear to be the advantages arising from the use of the "Veterinary Medicine and Dietary Tins:"

I. It being only necessary to elevate the animal's head a little higher than the horizontal position, he will be quieter.

II. The size of the delivery tube moderates the flow of the liquid, and it can be caused to flow in small quantities, and at intervals, by rotating the tube.

III. In giving gruel, as it must be passed through the tube into the bowl before it is given to the patient, there can be no risk of choking by large lumps passing into the throat.

CHRONIC DISEASE OF THE STOMACH AND INTESTINES OF A PONY.

By W. Elam, M.R.C.V.S., Huddersfield.

Dear Sir,—I have forwarded to you the stomach and part of the rectum of a black pony. He was rising five years old, fourteen hands high, the property of a tradesman of this town.

I was requested to attend this case on the 20th of November, 1862. The pony was then labouring under an acute attack of pleurisy, which in a few days yielded to the treatment I adopted, with the exception of a little supervening debility, for which I gave diffusible stimulants, with vegetable tonics. Being, as it was thought, sufficiently recovered, the animal was put to work; but on the 20th of December, 1862, I was again sent for by the owner, who stated that the pony would not eat, and that it had not passed any fæces. I, therefore, examined the rectum, which I found distended, not, however, with hardened excrement, but with fæces of a pultaceous character. These I removed with the hand, but in doing so was surprised to find, what appeared to me to

be numerous ulcers existing near to the anal termination of the tube, with some tumours, which I thought had mechanically interfered with defecation.

The owner now informed me that he bought the pony on the 4th of October, and at that time, and for some weeks afterwards, it was very relaxed in his bowels, which induced him to change the food from ground oats and bran to chopped hay and bean-meal, which he gave it in a dry state. This change had the effect of altering the condition of the bowels. The pony, however, did not look so lively, nor did it feed so well on this change of food as it had done before.

The bowels being somewhat constipated, I was induced to give some laxative medicine, combined with a carminative, which had the desired effect, but the appetite remained fastidious, and pain was evinced by grinding of the teeth, and frequently pawing the floor. I thought it my duty at once to inform the owner that the case was a hopeless one, as I had reason to think that the digestive organs were extensively diseased. I, therefore, advised that the animal should be destroyed, as there was no hope of any real benefit being derived from medicines, or anything else that could be resorted to. The owner assented to this proposition, and after its being carried into effect, I availed myself of the opportunity of making a post-mortem examination. I shall not make any comments on the lesions I met with in tracing the course of the alimentary canal from the pharynx to the anus, but shall be pleased on receiving your opinion, after you have examined the parts I have sent you, as to the nature of the disease, the cause which gave rise to it, and how long it may have existed.

I am, Sir, yours, &c.

To Professor VARNELL.

REMARKS ON THE ABOVE CASE, BY PROFESSOR VARNELL.

I considered the above case of sufficient interest to lay it before the members of the Veterinary Medical Association, to whom also the letter I received from Mr. Elam was read.

During the discussion, many pertinent questions were asked respecting the nature of this unusual disease, all of which I was not able satisfactorily to myself, I confess, to answer.

It must be admitted that we lack statistical information of diseases of the alimentary tract, so as to arrive at satisfactory conclusions; and I am also persuaded that to understand

the pathology of the diseases affecting its various parts, more research and minuter investigations are called for, based upon a complete knowledge of structural anatomy and physiology, than, as far as I am aware, has as yet been bestowed upon them by the veterinary pathologists of this country. Much may be obtained by cultivating this comparatively barren field, and if we would do anything in our own day we must put our shoulders to the wheel in earnest, and faithfully record such cases as may from time to time come under our notice. While we are recording them, it may be that many may appear not worth the trouble taken in writing them out. But this is a mistake. The day may come when some earnest worker in the field of scientific research will be ransacking the records of the past for materials to confirm, or otherwise, that which may take place in his day. Now, although we have as yet no record to refer to that can be relied on, certainly no systematically arranged one, nevertheless, let it not be said that we of the present generation are altogether neglecting the opportunities that present themselves in doing something for the benefit of those who may follow us. I find, however, that I am digressing from the subject I set out with; for which I must apologise. The observations I have made are intended as incentives to the junior members of our profession.

Mr. Elam asks, first, what is the nature of the disease; secondly, the cause that gave rise to it; and, thirdly, how long it may have existed? With reference to its *nature*, I shall merely describe the character of the lesions which present themselves, and not attempt to designate the disease by any particular term; and from this description an inference may be drawn as to the condition of those parts of the alimentary tract which I have had no opportunity of examining.

Only a few inches of the œsophagus were left attached to the stomach. I have no doubt, however, but the whole length of this tube was more or less affected. Its lining membrane was very much thickened, and to a certain extent it was hard and stiffened, somewhat like a piece of old parchment. Its epithelial surface was rough, particularly in places, and partially covered with horn-like excrescences. Following the course of this tunic into the stomach, to the extent which it covers that organ, I found it presented the same abnormal peculiarities. In some places this hypertrophied condition was such as to give to it the appearance of being covered with warts. At other parts, this portion of the stomach had the appearance of simple abrasions, which had become healed. The posterior half of the stomach presented but few abnor-

mities as compared with the anterior half; but I, nevertheless, observed two or three places in which the integrity of the mucous membrane was partially destroyed, and there were patches of a dark leaden hue, accompanied with some thickening. The mucous membrane of the pylorus, and its extension through that portion of the duodenum which was left on the stomach, was also evidently thickened.

The part of the rectum before alluded to was next examined. This presented a highly diseased condition. The mucous membrane was almost black, from its vessels being engorged with stagnant blood. It was also much thickened from interstitial infiltration into the submucous areolar tissue.

I observed two large and several small tumours to exist, which, on a section being made through them, proved to be abscesses. The smaller ones contained a sero-purulent fluid, and from the character of the interior of the large ones, I have no doubt but their contents were of the same nature.

Such is the character of the morbid parts under consideration, and judging from the description I have given of them, it will be admitted that the disease must have been of long standing, but how long I think it would be difficult to say.

With reference to the *cause* which gave rise to this disease, whatever opinion may be advanced, it must, in the absence of direct evidence, be considered hypothetical. A few years ago a case came under my notice in which the lining membrane of the œsophagus and cardiac portion of the stomach was affected in a similar way. In this instance I was told that mineral acids had been given to the animal as a tonic—perhaps imprudently.

A cause of this kind was suggested by one of the members of the Veterinary Medical Association in the case under consideration, as he had known it to be the practice with dealers to give such agents to horses, with a view of improving their condition.

Facts and Observations.

NEW MEDICINES.—A writer in the *Chemical News* states that the fashion of the present day is to discover so-called new remedies. The vegetable and the animal creations are being ransacked for them. The medical world is inundated with therapeutic agents, principally culled from the vegetable kingdom, having names so excruciating that the modest medical man feels a nervousness in asking for them. One of the precepts of the eclectics is, that the vegetable kingdom contains all the medicaments necessary for all known diseases, and they generally condemn mineral preparations. A French philosopher carried this a little further, and averred that every country produced medicinal plants curative of the diseases incidental to that country. This may, perhaps, be true, and if so, it would show something more than mere economy in nature; proofs of wisdom and design on the part of the Great Architect.

The writer having questioned the novelty of some of the so-called new medicaments, gives a list of many which were "cooked and hashed up by our forefathers until they were done to tatters, and then became obsolete." By the aid of chemistry, however, we are enabled now to withdraw the more active constituents of plants, in the form of vegeto-alkalies, acids, oils, resins, &c., separating them from inert matter, and these are at the present day resorted to as therapeutic substances.

One remark of his we may appropriate, and which we have only a little altered. Our Army Veterinary Surgeons have great facilities for introducing useful things to the notice of their brethren at home, as well as time to experimentalise on them, if they have the inclination to do so.

ROT IN SHEEP AND CATTLE.—We very much regret to state that the disease, "rot" or "bane," which has for many years past prevailed amongst the flocks and herds in Gloucestershire and adjacent counties, owing to the wetness of the season, has again manifested itself to a very alarming extent, more so than it has ever before. This is owing to the very great quantity of rain which has fallen, there having been scarcely two consecutive days unaccompanied by rain. The effect of these rains has been most severely felt in the low districts, and more especially on the borders of the

Severn. On these lands it is stated that there are few sheep which have entirely escaped the disease. Within the last week or two the disease has shown itself to the worst extent, and it now assumes a very serious aspect. To large flock-masters it is a matter of the greatest import, and the losses they have experienced are very heavy, as a great number of their sheep have been destroyed by the disease. Even when the disease does not prove fatal, the loss is great, as the animals suffering from the complaint are very much reduced. We have heard that at the country markets, which have been held during the last month, the supply of sheep has been very small, not near equal to the demand, and that those brought have not been of such a description as are usually offered. Indeed, butchers and dealers have to exercise great judgment in making their purchases, as, notwithstanding a flock of sheep may, to all appearance, look healthy, they are oftentimes infected by the disease. The malady has, during the last few years, been so prevalent, that it has proved a very great loss to flockmasters, which accounts for the scarcity of mutton and the high price at which it is selling.

The continuous rains of the present season have also had an ill effect on the young cow stock generally. They have been more or less affected with rot, though in this case we have not heard of any serious loss. On the whole, the present season has been attended with many casualties to sheep and cattle, and consequently not in the farmers' favour. —*Bristol Mirror.*

Rot among Hares.—It appears that disease prevails to a great extent among hares in various districts of Perthshire. Gamekeepers report that the malady resembles rot in sheep, and attribute the cause to the wet, cold, and variable weather which has prevailed for the last six months. On both high and low grounds the distemper prevails, and many hundreds of white and brown hares have been found dead. —*Scotsman.*

Wholesale Poisoning of Dogs with Strychnia. —Many of the local papers contain accounts of the wilful poisoning of dogs with strychnia. Within a few days between thirty and forty dogs were thus destroyed at Preston. The poison is placed on small pieces of meat, and put in the street. The dogs fall down suddenly, struggle for a few minutes, and then die.

Three dogs are also reported to have died suddenly at the

Southampton Railway Terminus about a fortnight since. They exhibited every symptom of having been poisoned by strychnia.

Disease among Foreign Cattle.—The rinderpest is raging to rather a serious extent among the herds of Bohemia and Hungary, and the disease is stated to be of so contagious a type that even sheep (?) are affected by it. This is rather a serious matter for the consumers of Paris, as by arrangements made by the Eastern of France Railway with various German lines, large numbers of Hungarian cattle have been brought to France of late; the transit being effected in about seventy hours, and on terms which leave a margin of profit to the importer, if such an expression can be applied to the speculator who brings them to Paris. Considerable interest has been excited among graziers and breeders by the announcement that the disease has been communicated contagiously to sheep (?), and further and more exact information is awaited on the subject with curiosity.

Suffolk Agrigultural Society. Veterinary Examinations.—It has been determined that at the future meetings of the Society no prizes shall be awarded to horses in any of the classes until the animals have passed a veterinary examination; and in future a Veterinary Surgeon will go round with the judges, and give them a confidential opinion as to the soundness of the animals entered for competition.

It is proposed that the next annual show shall be held in Fonnereau Park, Ipswich, on Friday, July 3rd.

Central Farmers' Club.—Among the subjects named for discussion during the present session of the Central Farmers' Club, is one of considerable importance to our profession, namely, "the Veterinary Art in relation to Agriculture." It is to be introduced by Mr. Fisher Hobbs, Boxstead Lodge, Colchester.

Salts of Cinchonia.—In cinchonia bark it is well known that two alkaloids exist, quina and cinchonia. Preference appears hitherto to have been given, in medicine, to salts of the former, to the almost exclusion of those of the latter; but as fears are now entertained of the partial failure of the trees yielding yellow bark, whence these bases are obtained in the largest quantities, Mr. Ince has, in the *Pharmaceutical Journal*, directed the attention of medical men to the salts of cinchonia, the therapeutical action of which differs little, if

anything, from those of quina. Especially he adverts to the muriate of cinchonia, which he describes as "a most elegant and inexpensive salt," and obtainable through the usual commercial channels.

Value of Field Birds.—The Acclimatisation Society of New Zealand are doing all in their power to promote the introduction, into that colony, of English field birds. Should their efforts prove successful, they will secure to these islands an incalculable amount of good by destroying the myriads of insects which now enjoy an undisturbed existence upon the growing crops of the farmers.

And yet in this country societies are formed for their extirpation, and poisonous substances sold for the same purpose. How short-sighted, and opposed to all history as to the great good and little evil caused by them, and to Nature. Most heartily do we concur with the following condemnation of this bird-murder:

"Of all the ignorant practices which have prevailed since the days of witch-ducking, this bird-destruction is the most thoroughly senseless, unmanly, and despicable, however much the perpetrators may attempt to qualify the proceeding by their complaints that the birds have picked up a few seeds. It is hoped that in time those who are not even convinced will be ashamed, and that we may never hear again of such stupid practices as poisoning and shooting down entire families of birds who were engaged from 'early morn till dewy eve' in clearing the fields and gardens of insects and grubs. The ravages of the real pests have ignorantly been laid to the birds, and orders have thereupon been issued to have them destroyed, the expense being frequently charged upon the church-rate of the parish. Of late years, as the parish expenditure has been more rigidly supervised, the advocates of bird-extermination have been compelled to make other arrangements. Accordingly they have banded together, armed themselves with guns—not to learn bayonet drill and prepare to defend their country, but to let fly at defenceless little birds; and so arose those discreditable, unmanly confederacies called 'Sparrow Clubs.'"

Linimentum Belladonnæ, Pharm. Brit.—The following is stated by the editor of the *Chemical News*, as the formula for this now celebrated preparation:—Belladonna root, in powder, 16 ounces; alcohol, sufficient to make 16 ounces of concentrated tincture; to each pint of which 1 ounce of camphor is to be added.

THE VETERINARIAN, MARCH 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

THE UTILISATION OF SEWAGE.

In the economy of nature there is no waste. All the material elements formed at the Creation still exist: there are no more and no less. They must have consequently undergone many changes and assumed many forms. It will, moreover, be observed that these transformations only take place in accordance with fixed and determined laws. The elements having performed their office in one form, by certain molecular changes induced among them, known by the name of putrefaction or decomposition, the integrity of the mass becomes destroyed, and other forms result.

Who shall say what metamorphoses take place in the substances consumed by a duck or a pig, wallowing in the mire, and from which is formed such savoury flesh? Or, to change the illustration; the Rose, the queen of flowers, may be designated a most accomplished chemist, for she changes corruption into beauty, and offensiveness into sweetness; since she converts that which is repulsive, both to sight and smell, into that which is agreeable to both; putrescent matter being her food.

The relationship existing between the organic kingdoms of nature is so patent as to need no comment. Each is made subservient to the other, and that which is deleterious and destructive to the one becomes conducive to the health and building up of the other: thus it is Nature that shows her love of an eternal cycle, and an equilibrium is maintained.

Of late years the attention of the public has been directed to the appropriation of excreta. In our fancied wisdom we have been too stubborn to learn from older nations, and hence we have justly suffered loss. We might have taken a lesson even from the Chinese, who from time immemorial have collected and used all their excretions and other ejecta by us allowed to run to waste. Necessity, the mother of invention, is, however, at last making us more sensible, and awakening us to a proper use of what has been

falsely designated refuse matter. It seems but a common sense view of the subject, that we cannot for aye and for ever be withdrawing from the soil, and never adding anything to it. Yet such we have been doing to a very great extent for some time past. We have allowed the drainage of our towns to escape into the sea, and at the mouths of our rivers has been deposited *débris* worth millions, lying as useless, which, if returned to our fields, would have doubled their former productiveness, but the want of which has rendered them comparatively sterile. To meet this loss we have been content to expend not less than £20,000,000 in sea-birds' dung, and how much more we know not in what are called artificial manures—an open door for all kinds of fraud and imposture.

From time to time we have referred to the use of sewage, and are glad to perceive that the importance of the subject is becoming appreciated in the proper quarters.

The select committee on sewage of towns have presented a second report, in which their former opinions, as to the value of sewage for agricultural purposes, are more definitely and emphatically pronounced. They had two grand objects in view—the reduction of local taxation, and the benefit of agriculture. The committee think that both objects may be attained by utilising the sewage; and they show, by analysis of the evidence brought before them, how this may be effected. They are further of opinion that the information they give will enable the authorities in cities and towns to deal with the sewage in the manner most suitable to the particular circumstances of the place; but, at the same time, they state that the municipal authorities have not at present sufficient powers to enable them to rent or otherwise deal with lands in their neighbourhood for the most profitable application of the sewage in relief of local taxation.

The following extracts may be worthy of perusal:

"In their analysis of the evidence, the committee give the following among the various conclusions they have arrived at:

"The evidence proves that sewage contains the elements of every crop which is grown. That, as compared with solid manure, there are advantages in the application of sewage to land. In the application of solid manure loss is sustained from evaporation, but no such loss occurs with sewage. In the application of solid manure to land, years may pass before its entire productive qualities are all absorbed, causing a loss to the farmer from the slow return of the capital sunk in manure; but in

the application of sewage, or any other liquid manure, no such loss occurs, as every particle of it comes into immediate action on the crop in a day or two. The evidence also proves that town sewage also contains a large amount of heat; this heat, it has been proved, is of great benefit to agriculture in stimulating vegetation. It is, therefore, evident that such a property in the sewage must greatly enhance its value as a manure. Also that the water alone of the sewage, even if entirely deprived of its manure, is of great benefit for agricultural purposes. The evidence further shows that one ton of average town sewage contains an amount of manure, which, if extracted and dried, would be worth a little over 2*d.*, taking Peruvian guano sold at £11 per ton as the standard; but, as it appears from the evidence that Peruvian guano is now selling at £13 10*s.* per ton, it is evident that the portion of manure contained in a ton of average town manure is now worth more than 2*d.* The evidence of Lord Essex proves that the use of sewage permanently improves land, its good effects being visible afterwards for years. The evidence further proves also that sewage has been applied to common grass, Italian rye grass, and to roots and grain crops with great advantage; and further, that sewaged grass has a great effect in increasing the quantity and richness of the milk of cows, as well as improving the condition of the cattle. It is further proved that the use of sewage hastens vegetation; also that cattle of all sorts appear to prefer sewaged grass to all others, and will eat it within a few hours of its being dressed with sewage; also that the earth possesses the power to absorb from the sewage all the manure which it contains, provided the sewage be not applied in too large a quantity, and that the crop is only benefited by the manure contained in that portion of the sewage which is absorbed by the soil within reach of the roots of the plant, and that the land is not benefited by any portion of the sewage which escapes off its surface. In the case of Lord Essex, Mr. Westwood, the late farm-bailiff of the schools at Anerley, and Philip W. S. Miles, Esq., results have been obtained by small applications of sewage which solve the question of sewage utilisation, showing that if commercial results are to be sought for—results which will enable the agriculturist to pay a fair price for the sewage, and thus yield a return to the rate-payers of our cities and towns from its sale—sewage must be treated like any other manure, and applied to the soil or the crop according to their requirements, bearing in view the returns to be obtained. . . . . This committee are therefore of opinion that the evidence which has been given fully establishes the fact that sewage is applicable to all crops, and that if commercial results are sought for, it should be applied in small dressings. If the sewage of our cities and towns were utilised to the best advantage over suitable areas, it is evident that little or no imported or manufactured manures would be used; this would greatly limit the area now supplied by such manures, and would therefore reduce the profits of all those engaged in the importation, manufacture, or sale of manure.

"In reference to the varieties of soil to which sewage has been applied, state of cultivation at the time, and comparative merits of different sorts for sewage application, the committee state that the evidence here proves that sewage may be applied with advantage to every description of soil which is naturally or artificially drained, and that the most profitable returns, as in the case of all other manures, will be obtained when it is applied to the best soil.

"On the question when the town sewage may be applied to land and to crops, it is stated that the evidence shows that sewage may be advantageously applied throughout the entire year, with the exception of hard frosts. With regard to the probability of town sewage being injurious to land or to crops from any of the ingredients which it contains, it was proved by the evidence that some of the matters which enter the sewers

of a town, in addition to the excreta of the inhabitants, and which, if applied by themselves to land, would be injurious to vegetation, yet, bearing as they do so small a proportion to the entire bulk of the sewage, they are lost sight of, and rendered perfectly harmless.

"On the further question, would the application of town sewage to land or to crops be likely to cause a nuisance, or be attended with dangerous consequences, the committee state, as the result of the evidence, that sewage, in the state in which it is found at the outfall of the sewers, even in the hottest weather, is very slightly offensive. If applied to the land in this state, and in such dressings as can be readily absorbed by the earth, no fear of nuisance need be felt, as the soil possesses the power to deodorise and separate from liquids all the manure which they contain, provided that too large a quantity be not applied, as the power of the soil has its limits; but if the power of the soil be over-taxed, and very large dressings be applied, a nuisance will be created in the neighbourhood, and injury to wells and running streams would occur.

"The evidence on the question whether solid manure can be profitably manufactured from town sewage, leads to the conclusion a solid manure cannot be manufactured with profitable results."

The last clause but one of this report it would be well to remember—the deodorising power of the soil and its retaining of the elements necessary for the growth of plants. This, in principle, has been long known; indeed, the ancients were acquainted with it, and Virgil adverts to it in his 'Georgics.' Of late it has been extensively practised. Especially is this property possessed by burnt clay, the silicates in which undergo a most remarkable change on the application of heat; many of them, in their natural state, not being acted on by the most powerful acids, but on their being heated to redness they become perfectly soluble in them. "Thus," says Liebig, "experience in agriculture shows that the production of vegetables on a given surface increases with the supply of certain matters, originally parts of the soil which had been taken up from it by plants—the excrements of man and animals. These are nothing more than matters derived from vegetable food, which in the vital processes of animals, or after their death, assume again the form under which they originally existed as parts of the soil."

Well may we add, in vain Nature has protested against our blunders by punishing us, as she always does, when we neglect her laws. Vainly has she pointed out, by the prevalence of plague and epidemics, that we were breaking her grand ordinance of perpetual rotation in decay and reproduction, and by interfering with her cycle within cycle of continual change.

Extracts from British and Foreign Journals.

THE NATURE OF THE SALIVA IN THE HORSE AND DOG.

By M. Claude Bernard.

[The following lecture was selected by us for publication some time since; it has, however, been unavoidably set aside to give place to subjects of more pressing interest.]

Saliva is secreted by three principal glands, the functions of which require in each particular case a separate investigation. Each of them has, in fact, its own peculiar use, and its action, when interrupted, cannot be supplied by that of its congeners.

As in the case of each gland a definite surgical operation is required in order to obtain in a state of perfect purity the liquid which it produces, I believe it to be indispensable that the precise anatomical notions which will enable you to repeat the experiment for yourselves should be laid before you at once.

The parotid gland in the horse is situated partly beneath, and partly before, the external ear. The numerous ducts which arise from its granulations gradually coalesce into a considerable trunk, which, after descending for a certain space, and then rising again towards the mouth, penetrates into the oral cavity in front of the second molar tooth. A curve is thereby described, the concavity of which embraces the ascending ramus of the lower jaw. The fascial vessels and nerve which pass over the duct must be carefully avoided in dividing it. In order not to injure these important parts, the anterior edge of the masseter must serve us as a guide in performing the operation. Let the incision be carried along its lower third, and the duct will be at once discovered, on the very point where it changes its direction and rises towards the mouth. It may there safely be divided so as to allow a slender tube to be introduced. The one we are about to make use of is a small silver pipe, containing a probe, which serves to clear it when obstructed, and makes it easier to be introduced. The excretory duct is then tied over the canula, just above the point where it has been introduced.

(After demonstrating the operation on the head of a horse, M. Bernard performs the experiment on a living animal: not a single drop of saliva escapes at the moment when the tube is introduced into the ductus Stenonis.)

The same proceeding is applicable to most of the herbivorous animals. The rabbit, however, offers a totally different arrangement; the ductus Stenonis in this species presents the same relations as in the dog; it therefore becomes indispensable to operate as in the case of this latter animal.

The parotidean duct in the dog passes through the muscular fibres of the masseter, and, following a direct course, opens into the mouth in front of the second molar. In order to practise the same operation as before, the lower edge of the zygomatic arch must be felt for, and followed from its posterior to its anterior extremity; a slight depression will thus be discovered; at this very point the duct passes into the mouth. Let a horizontal incision be made over this point; the duct will be easily discovered; but the facial vessels and nerve, which lie before it, must be previously dissected with care, and then drawn aside with a curved probe; the duct immediately appears beneath them; nothing remains but to open it and plunge a tube within its cavity.

(M. Bernard performs the experiment on a middle-sized dog. At the moment when the duct is laid open the animal utters a few plaintive cries. This proves, according to M. Bernard's remark, that the parotidean duct is sometimes endowed with sensibility, although the reverse is usually the case.)

You see, gentlemen, that not a single drop of saliva escapes at this moment from the tube; in general, the fluid is only secreted during the process of mastication and deglutition, or under the impression of acute pain or of a powerful sapid sensation. You are well aware that various moral influences are capable of exciting its secretion; the fact is a well-known one in man, and can be equally verified in the lower animals. The horse which has just undergone the operation we have performed in your presence has been fasting for several hours; the mere sight of his food will immediately bring on an abundant secretion.

(A bundle of hay being brought in, the animal exhibits great excitement, and a jet of saliva flows from the tube.)

Acids, however, are of all the agents that can be brought to bear upon the salivary glands the most powerful. Berzelius has remarked, several years ago, that alkaline secretions were excited by acid substances, and *vice versâ*; now, saliva, being an alkaline secretion, is likely to be elicited by the action of acids upon the gustative nerves, while alkalies remain comparatively inefficient.

(The experiment is tried on the dog, into the parotid duct of which a tube had been previously introduced. A few

drops of vinegar being poured into the mouth, saliva flows from the tube drop by drop; an alkaline solution being then substituted, no sensible result is obtained.)

Let us now examine the saliva we have obtained from both animals. In the dog, as you see, it is a limpid and colourless fluid, the reaction of which is strongly alkaline. But this is not always the case. We find in Tiedemann and Gmelin's great work on the digestive fluids that, after dividing the parotidean duct in a dog, they plunged its extremity into a small glass case, so as to obtain ten grammes (180 grains) of a viscous fluid, strongly resembling albumen in its general appearance. Such are, therefore, the properties which these celebrated observers acknowledge as characterising the parotidean secretion—a conclusion widely different from that which we have just arrived at; and, in repeating the experiment on ten or twelve different animals, you would probably meet once or twice with the same result. How is this apparent contradiction to be explained? A peculiar anatomical distribution is its real cause. It sometimes occurs that, before opening into the mouth, the ductus Stenonis receives the excretory canals of two or three little mucous glands, which impart the properties of their own secretion to the parotidean fluid. Nothing is easier than to prove this. In the animals which offer this peculiarity let the duct be laid open above the point where it is joined by these tributary canals, and the normal and unmixed secretion of the gland will be ascertained to be exactly similar to that which we have just exhibited to you. In man the anatomical peculiarity we have noticed as an anomalous exception in the dog is normal. The parotidean saliva, as poured into the mouth, always, therefore, enjoys a certain degree of viscosity in our own species. In this respect we find the dog approaching closer to our own organization than other animals.

As to the saliva obtained from the horse, you see it offers, on the contrary, a viscid appearance; as in the dog, its reaction is strongly alkaline; but the action of heat, or the addition of nitric acid, precipitates an albuminous substance, which appears to be peculiar to the equine genus, although its chemical composition has not yet been precisely ascertained.

Let us now consider a few of the more important characteristics of the secretion itself, viewed apart from the nature of the fluid produced.

A tube being introduced into the parotidean duct in a living animal, it may be easily ascertained that the saliva only flows at intervals. In the horse, which during mastication emits prodigious quantities of it, the secretion now and then

ceases in an abrupt manner, although the triturating process is still going on. The reason of this singular phenomenon long remained uncertain; we are now aware that the gland which lies on that side of the mouth where mastication is going on almost entirely suffices for the insalivation of aliments; when the animal (as in the present case) has had both ducts laid open, and a tube passed into them, it becomes evident that during mastication the two parotids are alternately called into action; while the one secretes, the other is at rest. The horse we have operated upon is at present satisfying its hunger, and you perceive that the saliva, however abundant, only flows on one side at a time.

In the normal state the chemical composition of saliva, as secreted by each gland in particular, remains invariably the same; it may, however, accidentally contain foreign substances. We gladly seize this opportunity of exhibiting, in a strong light, the elective action of glands; the secretion we are investigating at the present moment offers a remarkable instance of this singular property. Among the various bodies introduced into the blood we find some which almost instantaneously pass into the saliva; iodine and its various compounds enjoy this property. Other substances cannot penetrate without the greatest difficulty into this secretion; the salts of iron belong for the most part to this latter class. A direct experiment will enable you to judge for yourselves. The crural vein of a dog being opened, the extremity of a small syringe is introduced into the vessel; a determinate quantity* of a solution containing 1-100th part of the yellow prussiate of potash is then injected into the torrent of circulation, together with an equal amount of a similar solution of iodide of potassium; this latter substance will almost instantaneously be met with in the animal's saliva, while none of the usual tests exhibit the slightest vestige of the yellow ferro-cyanuret of potash. In the animal's urine we shall, on the contrary, discover it in considerable quantities, a fact which amply demonstrates the penetration of this substance into the system, although the salivary glands refuse to eliminate it.

(These various experiments are all tried on the dog, and meet with perfect success. It is necessary, before employing the usual tests, to neutralize, by adding a few drops of acetic acid, the alkaline reaction which saliva naturally presents; the chemical actions might otherwise be impeded.)

You therefore see, gentlemen, that iodine and its compounds will readily pass into the saliva, while the principal

* Five cubic centimètres.

salts of iron are not to be found in that fluid, under ordinary circumstances. We possess, however, various means of overcoming the resistance (so to speak) of the salivary glands. If, in the first place, we combine one of the refractory substances with another body that enjoys the property of passing into the saliva, the difficulty is overcome; iodide of iron, for instance, passes readily into the saliva, on account of the iodine it contains.

In the second place, if a direct injection be had recourse to, the salivary glands may be compelled, as it were, to eliminate the obnoxious substances. The largest doses of prussiate of potash may, for instance, be poured into the animal's veins, without giving the slightest indication of its presence in the saliva, even when recourse is had to the most sensible tests; but if, by means of an injection into the common carotid artery, we create, in a manner, a local plethora in the atmosphere of the salivary glands, we succeed in obtaining the desired result, which, under any other circumstances, we should invariably have failed in producing.

It therefore remains an established fact, that the so-called affinity of glands for certain bodies only expresses the greater facility with which they gain admittance into the fluid secreted; all substances are capable of passing into the secretions, provided that a sufficiently large quantity of them be conveyed into the blood that furnishes the elements of these various fluids.

The affinity of the salivary glands in particular produces, however, a great many singular phenomena. If, for instance, iodide of potassium be administered to a dog, vestiges of that substance will be discovered in the saliva for several weeks together. A sort of *circulus* is, in fact, established; iodine passes into the saliva through the elective affinity of the glands; but the animal, which keeps on swallowing its own saliva, impregnated as it is with iodine, absorbs new quantities of the substance, and the process might last indefinitely; but if the animal be strongly purged, the iodine is at once evacuated by the intestinal discharge, and appears no longer in the saliva.

It now remains for us to perform the inverse experiment. The internal surface of glands is endowed with a considerable power of absorption, provided the substances injected into their cavity belong to that class of bodies for which the gland exhibits a certain elective affinity. But when the secreting process is in full activity, absorption is almost entirely suspended; thus (as we have already informed you), if a strong solution of strychnia is injected into a dog's parotid

duct, the animal is almost instantaneously poisoned, if the gland is in a state of rest; but if the secreting powers have been previously called into play, the animal resists for a pretty long space of time.

In order to convince you of the rapidity with which absorption takes place in the glands, we shall now inject into the parotid duct of the horse which has already served for our previous experiment a solution containing 1-100th part of iodide of potassium; the duct being then tied over the canula, we shall almost immediately discover iodine in the secretion of the parotid on the opposite side—a fact which proves that, after passing through the vast extent of the entire circulatory system, the substance injected has been eliminated again by the glands, in an incredibly short space of time.

(The experiment is tried on the horse, and succeeds perfectly. The reactions of iodine are not, however, distinctly perceived before a few seconds have elapsed after the injection.)

You see, gentlemen, that, although rapid, the elimination has not been altogether instantaneous; but in the horse the circulation is known to be particularly slow; by injecting prussiate of potash into the jugular vein, and testing the blood drawn from another point, Hering has proved that in this animal the blood does not accomplish its entire circuit in less than twenty-five seconds — a fact which sufficiently accounts for the comparative slowness of the process of elimination. In the dog the same result would be more rapidly attained.—*Medical Times and Gazette.*

MEDICO-LEGAL CONTRIBUTIONS ON ARSENIC.

By Charles H. Porter, M.D.,* Professor of Chemistry and Medical Jurisprudence, Albany Medical College.

Intending in this paper to report a number of cases of arsenical poisoning, it has been deemed advisable to preface them by an account of the methods pursued for the detection of the poison. This is done for the reason that, when the details are given, each one may judge for himself as to the degree of reliance to be placed upon the results, and also because medical men generally are not acquainted with the minutiæ of such examinations.

* Communicated by the author, having been presented to the Medical Society of the State of New York.

It may also be said that, while the special works on poisons contain detailed information regarding the various tests, they are deficient in any systematic method of procedure applicable to those cases where the particular poison is unknown.

Aside from text-books on chemical analysis, and a single one on the detection of poisons, there is nothing easily accessible to medical men in this country that furnishes detailed information upon this subject. The design of the first part of this paper (which bears no claim to originality, but is a compilation from various sources), then, is to give the method pursued in the investigation of the cases hereafter reported—a general mode of procedure in all cases of metallic poisoning (ensuring the detection of the various toxical agents), with special reference, however, to arsenic; and again give a systematic plan, whereby the material can be most properly prepared for obtaining the various tests, together with the brief description of the more characteristic chemical reactions for arsenic.

Part I.—The Detection of Arsenic.

I. *General Considerations.*

1. *Chemical Evidence.*—The chemical evidence in cases of supposed poisoning is generally regarded as the least fallacious of all branches of proof. Owing to the labours of Orfila, Fresenius, Otto, Stass, Flandin, and others, in the detection of poisons, the subject has become so far developed that, in the majority of cases, a charge of poisoning may be satisfactorily decided by the results of a chemical examination. This opinion is entertained not only by professional chemists, as well as by intelligent medical men, but also by courts of justice, so that commonly the chemical detection of a poison is deemed necessary before a conviction can be obtained in a charge of poisoning.

But it must be said that not unfrequently too much reliance is placed upon chemical evidence, many deeming it unsafe to convict where this evidence is wanting. This is, however, a narrow view, and indicates an ignorance of toxical science. Simply because poison is found in certain remains, it does not necessarily follow that it was the cause of death; the symptoms and post-mortem appearances may prove the contrary; nor does the absence of poison in the dead prove that death was not occasioned by poison.

In this country few, if any, individuals have been convicted of the crime of poisoning where the poison was not

supposed to have been found in the body. In England the celebrated Palmer case offers an instance to the contrary, and others might be mentioned. There seems to be no good reason (where other evidence is positive) why a conviction should not be obtained, even in the absence of chemical evidence; all that is necessary in such a case is to satisfy the jury that the deceased died from poison, and this occasionally may be done without, as well as with, the class of evidence we are speaking of.

The detection of poisons in the tissues generally, as well as in the intestinal tract, and in the food and medicine given, furnishes the most complete chemical evidence of poisoning; if only found in the stomach or in the food or medicine, the testimony is weakened, because there is a possibility that it might have been placed there subsequently.

There are certain fallacies which must be guarded against in receiving evidence derived from chemical examinations in medico-legal investigations. It is not to be supposed that in all cases such examinations will be made by those most competent, and hence, besides the inherent difficulties of such researches, it is necessary to ensure ourselves against the ignorance and unskilfulness of the operator. Thus we may allude to the meagreness or absence of characteristic tests for many organic poisons, and the difficulty of separating them from organic mixtures. Again, and this is more pertinent to the subject of this paper, it has been ascertained that many of the reagents, supposed to be pure, are often contaminated with poisons.

Thus, arsenic is often found in zinc, sulphuric acid, and chlorhydric acid, and in other materials used in toxical investigations. The knowledge of this fact causes us to doubt whether the arsenic discovered in minute quantities in many reported cases was contained in the remains examined or in the chemicals used. The above remarks illustrate the great danger there is in relying upon the supposed detection of minute quantities of poison, in the absence of physiological and pathological evidence, and without a careful examination by competent authority of the methods followed in operating upon the materials examined.

Before treating of the methods of analysis, a few remarks may be made concerning the—

2. *Physical Examination of Materials for Analysis.—Food, Contents of the Stomach, &c.*—By a careful examination of these substances, poison may often be discovered. The best mode of procedure is to place a part of the suspected mass into a glass vessel, such as a beaker, and, after adding water, stir

the whole with a glass rod. After allowing it to settle, pour off the water, without disturbing the sediment. To this water should again be added, and the operation repeated. In the bottom of the vessel may often be seen arsenious acid in the form of small, white particles, which feel gritty and grate under the glass rod. These are to be taken out and dried. As simple tests, one or more may be gently heated in a glass tube sealed at one end, and another in a similar tube with carbonate of soda. If in the first tube is produced a white, crystalline deposit, and in the second a black, metallic mirror, it is pretty decisive evidence of the existence of arsenic.

Stomach, Intestines, &c.—If the intestinal track is to be examined, it should be completely opened, and its appearance carefully observed.

Very often particles of arsenious acid may be seen adhering to the mucous membrane, which may be tested in the manner just mentioned.

3. *Division of Materials for Analysis.*—Mechanical division facilitates chemical action; it is, therefore, proper to minutely divide organic substances before commencing their analysis. This may be done by a pair of scissors or small shears; but where a considerable quantity of animal matter is to be operated upon, a small new "meat chopper" (consisting of an iron cylinder containing a set of revolving knives) may most conveniently be employed. By such an apparatus, in five or ten minutes, the various parts, as the stomach, intestines, liver, kidney, &c., may be converted into an almost homogeneous pulpy mass, and thus be in the best condition for being acted upon by chemical agents.

4. *Necessity of a Preliminary Examination.*—From what has already been said of the fallacies of chemical evidence, and the nature of the errors that may arise, it is evident that in cases of suspected poisoning the chemical examination ought only to be entrusted to experienced and reliable men. No amount of labour ought to be spared in such an examination in obtaining reliable results, for an error may cost a human life, and from the fact of impurities of a poisonous character occurring in our chemicals, &c., there exists, in my opinion, a real necessity for a thorough preliminary examination. Portions of animal or vegetable matter, as the case may be, equal in weight to the articles afterwards to be examined, ought to be taken and subjected, in the same vessels and apparatus, to the same processes, by the use of portions of the same reagents in as large a quantity as will afterwards be used in the actual examination.

If this examination shows the vessels and chemicals to be pure or free from poison, the analyst may at once proceed to the examination of the suspected material; and if otherwise, he will detect the impure materials, and can replace them. Only after this procedure can the real examination be properly undertaken; the results will then be entitled to confidence, and all doubt will be removed from the mind of the examiner regarding the source of the poison, in case any is found; it will, besides, free him from many embarrassing questions when in the witness-box, which otherwise might seriously affect him.

It may be stated here that it was probably in consequence of arsenic occurring in the reagents employed in the investigations, and the omission of their preliminary examination, that led to Orfila's erroneous assertion that arsenic is a normal constituent of the human body. Because of this omission in the case of Mrs. Wooler (Durham, England, Winter Assizes, 1855), doubt was thrown on the scientific evidence by reason of the use of chlorhydric acid containing arsenic, the discovery of which impurity was not made until after the analysis was completed.

In every case investigated by me a preliminary examination has been made in the way just mentioned. It is true that but a few poisons, of which the chief is arsenic, are likely to occur in the materials employed in analysis; occasionally, however, others are present, and as a general rule, therefore, it is advisable to make a preliminary examination.

5. *Separate Examination of each Part.*—It is always desirable that each part be separately examined—as, for instance, the stomach, the contents of the stomach, the small intestines, the large intestines, the liver, &c.—for often, by proceeding thus, important information may be obtained. It is best also to consume in the first examination but a part of the material (after the whole has been finely divided and intimately mixed)—two thirds, for example—so that, in case of accident, an examination may still be made; and to this there is usually no objection, since in almost all cases, if the poison can be detected in the whole, it can be in the part mentioned, and in sufficient quantity not only to identify it, but to make the greater number of the confirmatory tests.

(*To be continued.*)

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Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Clinique Vétérinaire, January, 1863.

ORIGIN OF COW-POX.

An important question in medicine remains still undecided. That question is the origin of vaccine (cow-pox). A discussion of the greatest interest has lately taken place at the Imperial Academy of Medicine on this subject, which has been textually entered in the 'Bulletin' of the Academy, but which it would be necessary to read to be able to appreciate it. The different medical journals have abbreviated and expounded it in various ways; but as veterinarians probably are not subscribers to the 'Bulletin' of the Academy, I will reproduce the discussion, and also add some notes which arose almost entirely from the extra-academic discussions after the official debates.

The commission consisted of MM. Prince, Professeur de l'Ecole Imp. Vétérinaire de Toulouse, President; Laforgue, Professeur de l'Ecole de Médecine de la même ville; Amen et Batut, Surgeons of the Hospital Cayrel, Vaccinateur du Département; Lafosse, Professeur de la Clinique Ecole Imp. Vétérinaire de Toulouse.

M. Bausquet. — Gentlemen, it is in the name of your vaccine commission that I take the *parole* to give you an account of the report of which you just heard the title. Everybody here knows that before its introduction into medical science vaccine was known among the people. It was a general belief in Gloucestershire that those who had been infected by the disease from the cow were free from the smallpox. But it is not so generally known that it was the inoculation of the smallpox which led Jenner to the discovery of vaccination. Although it might have cost him his life, Jenner was a staunch advocate for the inoculation of smallpox, introducing it extensively in the county of Berks, where he practised. But he was not a little surprised to find that a certain number of patients resisted the effects of the inoculation; and as these were farm-servants, generally employed in milking the cows, he connected this fact with the popular tradition, and pursued his researches. The rest

is well known. He adopted the whole of the tradition, except the origin of the cow-pox, which tradition made to originate with the cow. Jenner, however, made its origin to be from the horse. Nothing is clearer and more explicit in this respect than his words. We have not the English text under our eye, but here is the Latin translation by Carro (Vienna, 1799) :—"Planta pedis inflammata tumet, unde materia peculiaris indalis profluit quæ in corpore humano morbum variolis ita similem exitat ut plane non dubitem variolas ipsas ab hâc materiâ originem traxisse." The same observation might certainly be made as to the correctness of this translation of the text, if it be a correct one; as, for instance, it states that the seat of the disease is at the bottom of the foot: but let this pass. On the origin of the vaccine, Jenner, for certainty, never varies in opinion. In the state of domesticity in which the horse is kept, he says, it is subject to a malady similar to variola, and which must arise from the same source. Afterwards he adds, "If you meet with the cow-pox in a number of cows, you may be sure that it has been produced by men who had been dressing horses that were affected with grease." "Qui prius equarum ulcera ad ungulas affectorum tractaverunt." At one time Jenner believed that, to obtain perfect immunity from variola, the matter of grease must go through the cow; but afterwards he declared that this was not necessary, from which it appeared that as he advanced in life he became more confirmed in his genealogy of the cow-pox. But Jenner was well aware that the question was one of observation rather than experiment. Unfortunately, he made but one experiment, and that, most unfortunately, was a failure, for it proved more against him than for him. Nevertheless that did not prevent him carrying the conviction to the grave that the cow-pox originated primarily and spontaneously in the heels of the horse, from which it passed by contagion to the cow.

Observation may quietly await the solution of the problem of these fortuitous inoculations, if sometimes they do take place; but observation is often fallacious—*Experientia fallax*. Experimentation, less patient, goes to meet the object it wishes to know; it tries to create artificially the cow-pox, by transmitting the virus from the heels of the horse to the cow or to the human subject. Sure of the process, it is sure of the result. Unfortunately, in physiological questions experimentation does not always hold the same language, and is often silent. Hundreds have transferred the virus of grease from the horse, and it has given the cow-pox to some and not to others. It has given it to Lay, to Carro, his Latin and

French translator, to Birago, Godine, &c.; but it has refused it to Woodville, Simoos, Viborg, of Copenhagen, Sacco, and your reporter, and recently to M. Depaul. Moreover, interrogated in the same manner, and to all appearance under the same circumstances, the results are sometimes in the affirmative, at others in the negative. It was thus that the veterinary professor, Mr. Coleman, became, from his first experiments, of a different opinion to Jenner, but by his second he was brought back to Jenner's views. Since that time scientific opinion has fluctuated between the two, without being able to fix itself, for the view taken by Jenner has never been entirely abandoned, although at long intervals only voices have been raised to defend it. The last are those of MM. Maunoury and Pichot. On the 5th of March, 1856, a journeyman blacksmith, twenty-eight years old, found himself suddenly attacked on the hands by pustules, which were very painful. He showed them to Dr. Pichot, who found they had the appearance of vaccine, which had arrived at the eighth or ninth day. Brissot (that being the man's name) had not been vaccinated, neither had he been near any cow, none being shod in the forge where he was employed. But, being pressed by questions, he admitted that he had, on the 11th of February, shod a horse, which, according to the statement of the veterinary surgeon of the locality, was affected with grease. From the 11th of February to the 5th of March there are twenty-four days; but as the pustules were from eight to nine days old, the *début* would only amount to fifteen days. What, however, was the true nature of those pustules? Were they vaccine? There was but one way of ascertaining that, which was by inoculating with the virus, and this M. Maunoury did; he inoculated a child eight days old, taking care to use a lancet which had never been used before. Five punctures only produced one pustule, which, however, had all the characters of the genuine cow-pox. At the same time M. Maunoury sent some of the virus taken from the man Brissot to the Academy, but the experiments made with it remained without effect. The virus of the child was now sent to the Academy, and this time the result of the experiments was all that could be desired. There were as many pustules as punctures. The same question again presents itself. Were those pustules vaccine? It is answered, yes, without doubt; for these children, having been revaccinated with proved virus, resisted the second vaccination, which is an uncontradicted proof that the first was effectual. But whence came the pustules on Brissot? All the circumstances lead to the belief that he got them from the greasy horse, which he had shod a

short time previously. If not, where did he get them? Certainly not from a cow, for there was none; and it was not from variola, for it did not prevail at the time. And, on the other hand, the pustules were in every case confined to the punctures in the ulterior inoculations. Might he have designedly caused himself to be inoculated on his hands, to disconcert science and mystify vaccinators? Of all suppositions this is the most unlikely. It is nevertheless to be regretted that the horse was not kept in view, and that there was no one found to reproduce artificially, and at his leisure, that which had occurred, says art, by accident. Notwithstanding, what is incomplete in this observation has its value. In all human affairs there is an *ensemble* of presumption which is nearly equivalent to certainty. Moreover, this is not an isolated fact; a similar one has occurred near Toulouse, with this exception, that it is better attested and more complete. In the spring of 1860, suddenly, at Rieumes, near Toulouse, an epizootic broke out amongst horses. In less than three weeks there were above 100 sick. Nobody at the time could have foreseen this; everything was as usual: the only remarkable fact was that the smallpox prevailed in the district, which seemed to indicate a disposition to eruptive fever. M. Sarrans, veterinary surgeon, saw and described this disease. Its *début* was by a general state of fever, though very slight, but which persisted until the appearance of the local symptoms; the principal of these consisted in a swelling of the hocks, which were red and painful, and attended with lameness. This swelling seemed to be formed by a number of little pustules, closely pressed together. This was the first period, and lasted from three to five days. The second period announced itself by a purulent discharge in the bend of the fetlock, which lasted about eight days; and in proportion as the discharge continued, the swelling decreased. Finally, the pustules desiccated about the fifteenth day, and large scabs came away with the hair, leaving cicatrices more or less marked, according to the exuberance of the eruption. It is worthy of remark that the eruption was not confined to the fetlocks; there was some here and there on the lips, the vulva, &c. At the first announcement of this epizootic amongst the horses a report soon spread that at no great distance some cows were affected with cow-pox, and it went so far as to state the farms on which it might be found. M. Sarrans went to them, and after a careful examination he declared it was nothing of the kind. According to Sarrans, who examined more than 100 horses, only two had caught the malady by external influences; all the others caught it by contagion, in

the following manner. To understand this better, it is necessary to know that M. Sarrans has in his possession at Rieumes a stallion, to which, from the 10th to the 16th, a great number of mares had been brought. To prevent accident from kicking, a side line had been passed over the fetlock of the mares, and it is by this means that M. Sarrans supposes that the malady was propagated. This is a delicate question to solve, when it is considered that all these animals respired the same air and were under the same external influences.

But now we come to the most interesting part of this report, and which calls for all our attention. Amongst the number of those affected with this epizootic there was a mare belonging to a M. Corail, which furnished the virus for inoculation, of which we are now going to speak. On a journey from Rieumes to Toulouse she was found to be dull, and did not do her work as usual; seemingly, she suffered in her loins. She was therefore taken to the veterinary school for treatment. The next day she was found to be lame, and nearly at the same time her hind legs were observed to be swollen, particularly the off one. Eight days after, she was brought again to the school, being still very dull, and off her appetite. She was now lame in both hind legs, but more so in one than in the other. *Symptoms.*—Difficulty in flexion of the fetlock; hot, painful swelling, confined in the left leg to the fetlock, but in the other extending half way up the metatarsus. On this swelling there were seen some patches where the hairs were bristled up, and under these hairs were found something like pustules, out of which oozed a liquid of an ammoniacal odour, though less fluid than the ichor of grease. On the 29th the mare was in the infirmary of the school, when the professor of the clinique ordered the parts where the hairs were raised to be denuded, by which were laid bare a number of ulcers. Some were elevated, others depressed, but most of them were of a circular form, and about the size of a lentil. Some were of the circumference of a fifty-centime piece, from which a sero-purulent matter exuded. On the 30th it was found, for the first time, that the superior and inferior lips, on the right side, were also affected with pustules, which were the more easily seen as the parts are bare of long hair. They were elevated, with a raised border somewhat less than a centimètre, jagged, through the animal having rubbed himself, depressed in the centre, and covered with a hard crust, which was strongly adhering. Thus the eruption, which was supposed to be confined to the legs, had extended to the lips. On the 4th of May the fever had disap-

peared, the lameness was less, and the swellings had decreased. On the 15th everything had assumed its normal state.

Not to interrupt this recital, nothing has been said as yet about inoculation. We return to it, as it is the most important part of this interesting observation. On the 25th of April, eight days after the invasion of the eruption, M. Lafosse took with his lancet some of the virus of the pustules, and publicly inoculated a young cow by a puncture on each teat. Four days passed without any alteration, either in the health of the animal or in the punctures. On the 30th the punctures began to redden, and in an excess of zeal, perhaps useless, the operation was renewed in the presence of a greater number of witnesses. On the 3rd of May, eight days after the first operation, the teats were covered with pustules; there were five patches, large, firm, round, and umbilical in shape, which made the margins appear more salient. From this aspect it would have been difficult not to recognise the cow-pox; M. Lafosse recognised it at once. The director of the school, M. Prince, on being consulted respecting it, gave the same opinion. From that moment the fact seemed so important that it was thought too much publicity could not be given to it. The prefect of the department, therefore, was written to, to ask him to appoint a special commission. The members of this commission were M. Prince, president; MM. Docteurs Cayrel, Laforgue, Amen, and Batut, and M. Lafosse, author of the discovery and of the memoir we are now analysing. On the 4th of May the inoculation was repeated in the presence of the commission, the virus being now taken from the teats of the cow, and inoculated into the teats of another cow. The result was the production of pustules of the same kind as those which had been produced by the virus taken from the horse, only better formed.

Up to this time the virus had only passed from the horse to the cow. M. Cayrel deemed it advisable to try it on the human subject; he therefore inoculated a child with the same result as if the virus had been taken from the beast. On the other hand, M. Lafosse proposed to carry it back to its source; he therefore inoculated another horse on the muzzle, which produced several pustules, but these were found by the commission somewhat altered in form, from the horse having rubbed the parts against the rack. Into one M. Cayrel having plunged his lancet, he inoculated another child, the result of which was six beautiful pustules. We spare you the further details of these inoculations, as no one was better qualified for the task than M. Cayrel, as no one is better acquainted with the vaccine disease than that gentleman.

The whole of the medical corps of Toulouse were invited to verify and follow the results. Besides the scientific body, there were also present MM. Fontan and Izarie; M. Leblanc, who on the first news of this event made the journey to Toulouse on purpose, and who has also verified it; and your reporter can also testify to it. But to remove all ground of doubt, and to reduce critics to silence, M. Cayrel has done what we did in 1836; he inoculated with virus produced by the horse one arm, and with regular vaccine virus the other, of the same individual, and he found that the virus of the horse produced the best and the largest pustules, but they were slower in being evolved than those produced by the other. From their aspect it would have been difficult to deny the nature of these pustules. Nevertheless, as confirmative, other experiments have been made to ascertain it. Those who had been inoculated with this virus were vaccinated with genuine cow-pox, but without any effect; and we might be sure that they would have resisted the smallpox in a similar manner had they been exposed to its infection. This, gentlemen, is the fact in all its simplicity, but in our opinion it is an important fact, and may be summed up in a few words. During the prevalence of an epizootie a mare falls ill with a tumefaction in the back, from which oozes some bloody matter; M. Lafosse takes some of this matter on the point of a lancet, and successfully inoculates two young cows, by which pustules are produced similar to and having all the appearance of cow-pox. The matter of these pustules is again taken, and by it are produced all the characters and peculiarities of real vaccination. This being the simple fact, we may be permitted to make some reflections on it, for we are not of those who think that facts do not admit of discussion. On the contrary, we think that the mind ought to judge the facts, or else they become full of delusions, to wit, the scandalous variations in therapeutics. First, what was the nature of this epizootie? In what did it consist? Was it the malady of the horse which Jenner describes as the origin of the cow-pox? Was it grease? The description given by Jenner is really so vague and short, that it is difficult to decide; hence the difficulty of the translators —the German having translated it *manke*, the Italian *girardone*, and the French first by *javart* and afterwards by *eaux aux jambes* (grease), which latter now prevails. Hence it is that all those who have applied themselves to the verification of the conjectures of Jenner have scrupulously taken the matter from grease in the horse, and nothing else. This has been done by your reporter, assisted by the suggestions

of M. Leblanc, and this is what M. Depaul has recently done, whose mind being unprejudiced and correct, he is therefore difficult to persuade.*

(*To be continued.*)

Review.

Quid sit pulchrum, quid turpe, quid utile, quid non.—HOR.

Air and Water, their Impurities and Purification. By HENRY BOLLMANN CONDY. London: John W. Davies, 54, Princes Street, Leicester Square; 1862.

THE difference in action of oxygen in its ordinary and ozonic state is well known to those who have given the subject any consideration. Not only are the effects intensified, but the body seems to have acquired new properties; indeed, so much so that Schönbein thought he had discovered a new elementary principle. Faraday, however, showed that it was only another form in which the same substance was capable of existing, termed by him allotropie. It is when in its nascent, or newly born, or set-free state, that oxygen manifests these peculiar effects. Among them is the rapid oxidation of organic substances on coming in contact with them. It is on this principle that *Condy's Disinfecting Fluid* acts. It destroys the odour of putrefying matter effectually by oxidizing the disengaged sulphuretted and phosphoretted hydrogen and other organic bodies.

According to Mr. Condy, the most readily available form in which oxygen can be thus employed is that of permanganate of soda and potash, designated by him "*the alkaline permanganates.*" But in certain special cases where the presence of alkaline matter might be objectionable, permanganate of lime may, with much advantage, be employed instead of the true alkaline permanganates. When this is

* All the animals from which MM. Depaul and Bausquet have taken the fluid, and with which they have inoculated, were affected by grease (eaux aux jambes), and these cannot be confounded with the malady of the horses of Rieumes, to which the name of grease ought never to have been applied, and thus the much to be regretted confusion avoided. I procured all the animals for the experiments of MM. Bausquet and Depaul. —U. L.

the case, the oxide of calcium, which constitutes its base, is converted into carbonate by union with the carbonic acid held in solution by the water, and is precipitated along with binoxide of manganese and sulphur. There then remains a fluid of very remarkable purity, which, so far as organic matters are concerned, surpasses even ordinary distilled water, which is seldom entirely free from impurities of an organic nature. As it is owing to organic substances undergoing decomposition in water and air that these *pabula* become empoisoned, and are productive of disease, so that which destroys the former necessarily becomes the means of purifying the latter and rendering them conducive to health. The author is also anxious to demonstrate that the compound patented by him is not only most efficacious for this purpose, but nothing deleterious is superadded, while at the same time it is an admirably delicate test for the presence of all impurities. "Few facts in sanitary science," he asserts, "are better established than the injurious effects which are produced on the health by impure water, when used for dietary purposes." Of this proofs are adduced from numerous observations made by the Metropolitan Medical Officers of Health and other competent authorities; and "the records of adventurous travel, military expeditions, and naval explorations, afford abundant examples of the mortality which is occasionally entailed by the use of polluted water."

"All kinds of impurities or foreign matters, whether organic or inorganic, to which water is subject, may justly be regarded as injurious to health; but it is especially the former class of substances which, on meeting with unwholesome atmospheric or other influences, give rise to those sudden visitations of disease which, under the forms of diarrhœa, fever, cholera, &c., carry off so many victims. Some inorganic impurities in the long run undoubtedly prove prejudicial to health, but they seem to be incapable of producing the serious symptoms which characterise zymotic diseases. To defects in the composition of water, as regards its inorganic constituents, have been ascribed various chronic and constitutional affections, of which the 'Aleppo button' and goitre are two of the most remarkable examples. Such evil effects are, however, slow and insidious compared with those caused by organic contaminations, which, under certain circumstances, act very much like poisons, or those emanations from organized beings on which contagion depends. Like the latter, whose morbid influence Liebig has so clearly shown to be the result of a certain state of transformation, which acts on the blood—itself an extremely complex compound, in a condition of constant metamorphosis—after the manner of a ferment, organic impurities must be regarded rather as exerting a certain amount of morbific force,

than as constituting a given volume of positively delcterious matter. Hence extremely minute quantities taken into the system are capable of producing very extensive mischief."

Mr. Condy goes on to say that—

"The detection of organic matter in water had long presented serious difficulties to chemists, who were obliged to have recourse to very tedious methods, based on the estimation of the amount of nitrogen and carbon contained in the deposit formed by the evaporation of the water submitted to examination. Having for many years been in the habit of using the alkaline permanganates for the removal of organic impurities from certain liquid substances, which, as a manufacturing chemist, I was engaged in making, I had my attention early directed to the part which those salts were capable of performing in the purification of water. After satisfying myself that the action of those substances could with certainty be relied on for the detection and practical estimation of varying quantities of organic matter, in the year 1856 I communicated my method to several of our leading chemists, who verified my experiments and reported favorably of the advantages of my method."

"But the action of the permanganates is not limited merely to the testing of water for organic impurities; the properties possessed by those substances, of rapidly decomposing organic matter, and making manifest to the eye their effects, render them admirably suited to the *purification of water* employed for drinking, cooking, and general domestic purposes. Composed of oxygen in combination with manganese, the mildest and most wholesome of the metals, and one or other of the alkalies, the alkaline permanganates can hardly be supposed capable of proving injurious even when, from haste or carelessness, a trace of them in solution or a minute portion of binoxide of manganese in suspension may remain in the water treated; for it has recently been shown that manganese is one of the normal constituents of the blood, and that in some of the very healthiest races of men, such as the Scotch, who are fed to a great extent on oats, a cereal which contains that metal, it is always present in the body. Indeed, it is extremely probably that manganese is a requisite constituent of the human frame, and that its entire absence is not conducive to health. The nature of the reaction which takes place between those compounds and organic matter is, moreover, such, that when they are used with caution, and not in excess, the whole of the metallic ingredient present is separated by precipitation in the solid form, leaving in the water only the alkali which had been in combination with it. As most waters, by reason of a certain portion of carbonic acid which they contain, hold in solution, in the form of bicarbonate, a small quantity of carbonate of lime, the presence of this free alkali is rather an advantage than the contrary, since by neutralizing the excess of carbonic acid it converts the more soluble bicarbonate into a less soluble carbonate, which then subsides as a deposit, leaving an alkaline carbonate in its place."

* * * * * *

"The importance of using only soft water in pharmaceutical operations is admitted on all hands. Medical men, in prescriptions requiring water, uniformly order *aqua pura* or *aqua destillata*. But there is one very important purpose to which water is now very extensively put in surgery, namely, 'water dressings,' in connection with which sufficient attention is seldom paid to the quality of the water employed. Miss Nightingale, with that practical tact which distinguishes all her observations on hospital economy and the management of the sick, has well pointed out the prejudicial effects produced by the use of impure water for dressing wounds, as

compared with those obtained from the application of soft and pure water. 'When water is hard,' she remarks in her *Notes on Nursing*, 'it is worth while to have distilled water for every water-dressing.' There can be no doubt that water charged with mineral and organic impurities must exert a very deleterious influence on wounds already but too predisposed to unhealthy action. For this and all other external applications to the body, especially in sickness, water purified and oxygenated by means of the permanganates will be found extremely valuable."

Adverting to the purification of air, Mr. Condy remarks that—

"Air is the chief necessary of life, and respiration the first and last act of our existence as independent beings. The necessity for due supplies of food, however imperative, is one that admits of modification; life, and to a certain extent health, are not incompatible with an occasionally scanty and irregular allowance of nourishment. But the essential conditions of respiration are that it shall be never-ceasing and unrestrained. Each inspiration exerts its influence instantaneously, and with the expiration which follows, its action terminates. The air we breathe surrounds us accordingly on all sides, in inexhaustible quantities, and is drawn upon by every human being, without thought or effort, at the rate of from fifteen to twenty respirations per minute. Unlike food, which, in order to be able to support the numerous tissues of the body, must be supplied of various kinds, air, to be fitted for its assigned duty, demands no precaution beyond that of guarding against contaminations of foreign matter; for in all situations on the globe, and at every elevation within our reach, the free mass of the atmosphere maintains a uniform composition, so far as its essential elements are concerned."

Having given the constituents of the atmosphere, our author goes on to observe that, besides these,—

"The atmosphere contains minute portions of all substances susceptible of remaining aëriform at ordinary degrees of heat and pressure, as well as of every matter, whether solid or fluid, which is capable of being dissolved or suspended in the atmospheric mixture. These may be regarded rather as accidental than normal constituents. It is they which for the most part constitute the contaminations of the atmosphere. With few exceptions, they are substances of an oxidizable nature. They consist of a great variety of more or less diffusible products, such as the gases generated by combustion and similar processes; traces of nitric, acetic, and sulphurous (or rather sulphuric) acids, of nitrate, acetate, and hydrosulphate of ammonia, and, in certain maritime situations, of muriatic acid and iodine; exhalations from the organic kingdoms, morbid emanations from men, animals, and plants, when suffering from disease, and the results of their decomposition after death; as well as of numerous forms of more or less tangible solid substances, such as carbonaceous matter, infusoria and other microscopic organisms, pollen of plants, spores and germs of some low orders of living beings, and finely subdivided inorganic matter. As even the latter group of bodies are invisible to the naked eye in ordinary diffused light, none of the above substances can be regarded as cognizable to the senses except when they naturally possess or happen to acquire odorous properties. They then become perceptibly offensive, and cause the atmosphere in which they exist to be distinguished as 'bad' or 'foul.' It is principally the truly gaseous class of impurities which are possessed of smelling properties, although, on the one hand, some of them, and those not the least deleterious, such as carbonic oxide, are devoid of odour; and

on the other, some of the less diffusible atmospheric contaminations, such as ordinary bodily exhalations, which are not commonly perceptible to the nose, can be distinguished by persons of more than common acuteness of smell, especially when proceeding from the bodies of the sick. The effluvia which certain wild animals leave on their tracks, and which constitute the 'scent' of the hunting-field, afford a familiar example of the latter substances. In the parliamentary report which he drew up, in 1847, on the subject of disinfectants, Dr. Leeson succeeded in showing very clearly that there is no necessary relation between the odorous and deleterious properties of atmospheric impurities, and that merely to deodorize is not necessarily to disinfect. With reference to this point, he classifies the elements of morbid animal exhalations and malarious and putrefactive vapours as follows:

Dangerous, but inodorous.	*Odorous but slightly offensive.*	*Most offensive, but not infectious.*
Remittent miasms	Ammonia	Sulphuretted hydrogen
Typhoid miasms	Carb. ammon.	Phosph. hydrogen
Carbonic oxide	Cyanogen	Carburetted hydrogen
Carbonic acid	Sulpho-cyanogen	Sulph. ammon.

Having referred to the researches of Ehrenberg on infusorial organisms, Mr. Condy adverts to more diffusible contaminations, emanations of effete matter, which are constantly proceeding from organized beings and their excreta, especially during disease, as well as to the organic matter existing in human and other exhalations. According to Dr. R. Angus Smith, respired air contains 3 per 1000 of animal matter in the form of putrescible albuminoid substances. Dr. Eiselt, of Prague, has discovered pus-cells in the air of the Orphan Asylum of that city. Now, it is with impurities of this nature, and others allied to them, that contagion and infection are intimately connected, and hence the desirability of possessing means to effect their destruction.

"The atmosphere is therefore evidently subject to very considerable variations in respect to the substances which it contains; in some places, and under certain circumstances, it is much more pure than in others. The two extremes are probably to be found, on the one hand, at or near the ocean, which has the effect of absorbing any heterogeneous particles present, and on the other in crowded localities in large towns, more especially in hospitals and places containing large numbers of sick. The air in both of these extremes of purity and impurity, as well as in all the innumerable intermediate conditions, is capable of supporting life, at least for a limited period. It may usually be considered sufficiently pure for the purposes of respiration and animal health, when its chemical properties are those of oxygen—that great mainspring of all organic activities. With few exceptions, this is the case with the 'open air,' apart from artificial shelters where men or domestic animals are more or less closely congregated together. The effects produced on the system by a foul atmosphere depend in a considerable degree on the state of body and the constitution and habits of those exposed to its influence; for the air of even the worst ventilated places is hardly ever so impure as to be rapidly destructive to the

life of every individual obliged to respire it. The Black Hole of Calcutta itself was not fatal to all of the victims who were barbarously confined in it. Out of the 146 persons who were shut up in that horrible dungeon, twenty-three were taken out alive; but most of the survivors were subsequently attacked with putrid fevers."

It will be seen that we have extracted freely from Mr. Condy's pamphlet. We have done so *con amore*, because there is much in it that is both explanatory and suggestive; and we may hereafter return to its consideration. In the mean time we may be permitted to recommend the use of *Condy's Disinfecting Fluid*, confirmed as its utility has been by the highest testimonials; and it will be remembered that it is not only a disinfectant, but a deodorizer and decolorizer also, its action being dependent on the transference of oxygen to organic substances undergoing decomposition or change, by which both air and water are rendered impure, and effecting their rapid destruction.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JANUARY 30, 1863.

PRESENT.—The President, Professor Spooner, Messrs. Barrow, Broad, Ellis, Ernes, Harpley, Hunt, Jex, Lawson, Mavor, Moon, Robinson, Silvester, Varnell, Wilkinson, and the Secretary.

The PRESIDENT in the Chair.

The minutes of the preceding meeting were read and confirmed.

The *Secretary* read a letter received from the Foreign Office, and also laid on the table four copies of a Report of the Veterinary Institution of Saxony, which had been transmitted from the Foreign Office for presentation to the Royal College of Veterinary Surgeons. He also laid on the table a presentation copy of Messrs. Brande and Taylor's new work on Chemistry for the Library of the College.

The thanks of the Council were ordered to be given for these presentations.

A letter was read from Mr. Thomas Hickman, late Veterinary Surgeon in the army, requesting that he might be furnished with a new diploma, or a certificate of his having passed his examination, he having lost his original diploma while on

service in India, from its having been stolen by the natives. He informed the council that he had used every means, by advertising in the Indian Journals, for its recovery, but without success.

After a lengthy discussion it was moved by *Mr. Harpley* and seconded by *Mr. Mavor*—

"That Mr. Hickman's being an exceptional case, the Council would take it into their favorable consideration and grant him a certificate setting forth that he was a member of the Royal College of Veterinary Surgeons."—Carried.

It was then Resolved—

"That a certificate, signed by the President and Secretary, to the following effect be forwarded to Mr. Hickman—

"It having been shown, to the satisfaction of the Council of the Royal College of Veterinary Surgeons, that the diploma belonging to Mr. Thomas Hickman was lost in India during the late mutiny, we, the President and Secretary of the Royal College of Veterinary Surgeons do, by the instructions of the Council, hereby certify that Mr. Thomas Hickman did pass his examination as a Veterinary Surgeon on the 11th day of May, 1853."

"(Signed) James Beart Simonds, *President.*
William Henry Coates, *Secretary.*"

The Registrar reported that six deaths had occurred during the past quarter, viz., Mr. Wm. Charnley, Wrexham, Denbigh, Diploma dated 1835; Mr. George Cook, Newcastle-on-Tyne, 1841; Mr. Bernard Reynolds, Newbridge, 1851; Mr. Daniel Bovett, Bridgewater, 1835; Mr. Robert Cook, Erith, Kent, 1848, and Mr. John Kent, Bristol, 1813. Also that four members, late pupils of the Royal Veterinary College, London, had been admitted during the same period.

It was proposed by *Mr. Ernes*, and seconded by *Mr. Broad*—

"That a Report be presented to the Council by the Secretary, after every examination of Candidates for the Diploma, as to the number examined, those that had passed, those that had been rejected, and also the names of the examiners, and other persons who were present."—Carried.

The *President* drew the attention of the Council to the Bye-law, No. 28, relating to pupils presenting themselves more than three times for examination.

After some discussion, it was Resolved—

"That the most liberal construction be put on law 28."

It was further Resolved—

"That the *President* call the attention of the Court of

Examiners to Bye-law 33, and express to them the wish of the Council, that the rejected pupils be addressed by the Chairman of the Court."

Notice of motion was given by *Mr. Wilkinson*—

"That to meet the difficulty of the case relative to the construction to be put on Bye-law 28, he would suspend a notice for the alteration of Bye-law 28."

The Finance Committee reported that they had examined the vouchers and receipts of payment during the past quarter, and found them correct.

The Quarterly Balance Sheet was read, from which it appeared that the present liabilities of the College amounted to £63 11*s.* 10*d.*, and that the Balance in banker's hands is £399 5*s.* 4*d.* Cheques were ordered to be drawn for the current liabilities.

The Report was adopted.

The Registration Committee reported that they had carefully revised the Register, and now laid on the table one dozen proofs complete to the present time. They asked for one thousand copies to be printed.

The Report was adopted.

The Inquiry Committee submitted their Report. The Statistical Account, as prepared by the Secretary, showed that the total amount of letters received up to the present time was 394; and the number of practising Veterinary Surgeons throughout the kingdom was but 914, while the number of those who assumed the title of Veterinary Surgeon was 1244; and of those practising as Farriers, 1189.

The Report was adopted.

It was also Resolved—

"That the Report be printed and distributed amongst the members of the Council."

The business of the Quarterly Meeting having terminated, a SPECIAL MEETING was then convened to consider the Alteration of Bye-law 27. After having been proposed by *Mr. Harpley*, and seconded by *Mr. Wilkinson*, the proposed alteration to the following effect was carried—

"Each candidate, intending to present himself for examination, shall forward in writing to the Secretary of the Royal College of Veterinary Surgeons a notice of his so doing, not less than seven days prior to the examination taking place. He shall, also, at the same time forward to the Secretary such certificate, or other legal proof, as may be required as to his having been educated at some one of the recognised Colleges. And also the fee of £7 7*s.* for such examination."

It was Resolved—

"That a SPECIAL MEETING of the Council be called within fourteen days to confirm the alteration now made in Bye-law 27."

Mr. Robinson gave notice of a proposed new Bye-law relative to the section of the Board of Examiners acting for Scotland, which was ordered to be suspended in the Board Room for three months.

AT A SPECIAL MEETING OF COUNCIL, HELD FEBRUARY 11, 1863,

FOR the purpose of *confirming* the alteration of Bye-law 27.

PRESENT:—The President, Messrs. Braby, Dickens, Field, Harpley, Moon, Varnell, Wilkinson, and Secretary.

The PRESIDENT in the Chair.

The minutes of the SPECIAL MEETING, at which the said Bye-law was adopted, were read and confirmed.

The *President* then called the attention of the meeting to the regulations of the Charter for the re-making of alterations in the Bye-laws, when

It was moved by *Mr. Harpley*, and seconded by *Mr. Braby*—

"That the alteration of Bye-law 27, made at the meeting of the Council held on January 30th, be now duly confirmed."—Carried.

By order of the Council,

WILLIAM HENRY COATES,

Secretary.

Veterinary Jurisprudence.

IMPORTANT TO FARMERS AND DEALERS.—ECZEMA EPIZOOTICA IN CATTLE.

A CASE of considerable importance was heard on Monday, January 26th, before the Worcester City Bench of Magistrates, including the Mayor (A. C. Sherriff, Esq), J. H. Clifton, T. Chalk, R. Padmore, M.P., E. Webb, and T. Lucy, Esqrs. Street Inspector Berridge preferred a charge against Mr. William Brown, a cattle-dealer, of Berkeley Heath, Gloucestershire, for having taken a heifer into Worcester fair on the 19th inst., the said heifer being suffering from an epidemic disease of a contagious nature.

The officer stated that on the day in question he took possession of a heifer belonging to the defendant, which was exposed among several

others belonging to him; it was evidently suffering from the disease, foaming at the mouth, and feet sore and bleeding. Told him the heifer was diseased, but Brown said it was not. Subsequently he admitted it had been diseased about a fortnight, and said he had bought the beasts at Bristol of a man who guaranteed them to be all right.

Mr. Gaisford, solicitor, Stowe, Berkely, appeared for the defendant, and cross-examined *Berridge*, who said that the disease was an epidemic, and what some called the murrain, being an inflammation of the tongue, mouth, and feet. Believed it first showed itself in the mouth. No one instigated him to look after defendant's cattle in particular. Was on duty, and saw them passing, and could not mistake their appearance. Didn't know Mr. James Corbett; didn't ask him or any other man to point out the cattle having the disease; might have asked some one to give an opinion, but not because he had any doubt about it himself. Had looked round the whole of the fair, but saw no cattle bad enough to warrant his seizing them. Did not see one lot of twenty-seven cattle, all having the disease. Had attended Worcester fairs for the last twelve months, and this was the first case he had seen. Had known the disease to last for a month or six weeks.

Mr. Furnivall, veterinary surgeon, who has recently come to reside in this city, deposed that he had examined the heifer that morning; found two ulcers on the tongue and several small ones round the upper and lower gums; the fore feet were in a sloughing state, and the hind ones appeared to have been in the same state, but were drying up in consequence of the dressings which had been applied. The disease was what was popularly known as "the thrush." Pigs and sheep suffered from the same disease, and he had made an experiment of infecting some pigs, which became so bad that he was compelled to kill them. This disease was not the variola ovina, which was confined to sheep. Had never known the thrush removed under twenty-one days. Cattle sometimes died from it, but if taken in time the disease was not fatal. If anything, it was more infectious than the smallpox in sheep. The witness, on cross-examination, said he had had considerable experience in the Birmingham and Wolverhampton markets, where the disease prevailed to a great extent. In his own experience he had known four fatal cases, from neglect, which had occurred near Walsall. In general, animals having once had the disease did not catch it again; and so he would rather purchase a heifer which had had the disease than one which had not, for the simple reason that the latter was more liable to become infected and communicate the disease to other cattle. He accounted for the existence of the disease from atmospherical causes; it was contagious and infectious. In his opinion it would take four days after a beast had become infected before the symptoms would appear. Sometimes the disease appeared first in the foot, sometimes in the mouth. Had never heard of sheep being seized by an inspector for having the foot-rot, though that disease was quite as infectious as any. Would positively swear that he had seen in the mouth of the heifer an ulcer of the size of a florin. The witness fully and technically described the appearances presented by the disease.

Mr. C. Marsden, veterinary surgeon, had gone to the Hope and Anchor stables in company with the last witness and Berridge, and examined the heifer. His evidence was generally corroborative of Mr. Furnivall's, adding that the foot-rot in sheep did not affect the quality of the meat as human food, while the thrush did. Mr. Marsden was cross-examined at some length, but with a tendency to confirm the evidence of the last witness.

Mr. Gaisford then addressed the Bench, commenting on the importance of their decision in this case, which would affect a very large circle of farmers, dealers, and others. There was always a very natural bias in favour of upholding a public officer in the performance of his duty, and he would not attempt to cast blame on Mr. Berridge, but it was a fact that if he had looked through the fair he would have found scores of cattle affected by the disease. Now the 11th and 12th Victoria was a highly penal statute, and in putting a construction on it the Bench would probably give the defendant the benefit of any doubt. The Act was passed under very peculiar circumstances, and was more specially directed against the variola ovina. It was only by inference, and almost by accident, that horned cattle had been brought within the scope of the Act. Some intermeddling M.P. had interpolated a few words in the Act, on which such informations as the present were based, and he commented on the michievous results of various Members of Parliament each putting his "finger in the pie," and making interpolations for various purposes not at first contemplated in the Act. He urged that, as the Act was at first intended only to apply to the smallpox in sheep, and then the words added, "or any disorder of like nature," that therefore it was imperative to show that the disease under which defendant's heifer was labouring was *ejusdem generis*, or of the same kind as smallpox. He contended that the thrush was not the same kind of disease as the smallpox, and that the Act was not intended to embrace such mild diseases as that, but only the more fatal kinds, as smallpox, pleuro-pneumonia, &c. If the Bench were to decide against the defendant they might as well close the markets and fairs, as farmers and dealers would not be got to attend them, it being impossible to guard against their cattle being seized as infected, although they might have left home apparently in good health. At this time of the year the owners of cattle were never safe, for the beasts might be well one day and ill the next—might be sent from home well, and when in the fair exhibit symptoms for the first time, and be seized. Defendant had bought the heifers of a Mr. Johnson, and thought them quite sound. In conclusion, Mr. Gaisford put it to the Bench to say whether this disease came within the meaning of the Act.

The magistrates consulted, and decided that in their opinion it did; whereupon Mr. Gaisford called—

Mr. James Corbett, farmer &c., of Croome, who deposed that he had kept Worcester markets and fairs for forty years. Was at the fair on the 19th. The disease in question was commonly called "the tick." It was so prevalent that no one could go into any market without seeing some diseased beasts, and there were many of them in Worcester fair on the 19th inst. On that occasion Inspector Berridge asked witness to go with him and examine some cattle, but he declined doing so, remarking that his own cattle were as likely to have it as any others, and if the inspector didn't know his own business some one else should be put in his office. The disease was now so well known that no one was frightened at it, and indeed the farmers and dealers took but little notice of it. He had known beasts well one day and "down" the next, and defendant's cattle might have been well when they were sent from home, and yet show symptoms of disease in the fair. For his part, he would prefer buying cattle which had had the disease, and was now willing to give defendant £8 for his heifer, being about the same that he would have given for her in good health. Would rather have the whole of his cattle tainted at this time of the year, as they suffered less now than in any other season; and if he were going to graze them he would not object to turn in a diseased beast among the whole of his herd. With regard to defendant's heifer,

he had opened her mouth, and believed that there was nothing the matter with her.

Mr. G. Ratcliffe, farmer and dealer, Haresfield, near Gloucester, gave testimony of a similar kind.

Mr. Wm. Moule, farmer, of Elmley Lovett, deposed that he was in Worcester fair on the day in question, and was about to purchase the heifer of the defendant when Berridge seized her. The heifer was getting better of the disease, and he would have given within 10*s.* as much for her as if she had been well. Considered her to be worth £9, and would give that for her now. He thought that no veterinary surgeon who understood his business could have said he would not give a sovereign for her. There was certainly no ulcer in her mouth of the size of a florin.

Mr. P. Foxwell, farmer, of the London Road, said there were scores of infected animals in the fair that day, and not a Saturday occurred without lots being there. When the disease first appeared great complaints were made, and considerable alarm prevailed; but now the farmers and dealers were used to it, and took no notice of the disease, as it was not attended with much danger. He should not hesitate to send infected cattle to market, provided they were sufficiently recovered to walk there.

Mr. Rose, veterinary surgeon, said that the breaking out in the mouth was not properly called an ulcer; it was where a vesicle had sloughed off and left a cicatrix. It used to be called a vesicular epidemic or epizootic disease; and the vulgar name "tick," now given to it, originated from the last syllable of the hard word "epizootic." He did not believe it to be infectious, but that it was contagious there could be no doubt. The heifer in question had been in an unsound state, and ought not to have been put with other cattle. He would rather that poor stock had the disease now than at any other time of the year. It very generally prevailed, but no doubt there were large herds of cattle which had never yet had it, and of course it would be better that they never should. Many owners of stock got up in the morning and found scores of their cattle affected which had never been in contact with others. Defendant's heifer was now in a fair way to recovery, and he should not object to put her in the fair; but on last fair day she could not have been in a right state for the fair.

Mr. Wilson, farmer, having also given evidence,

The magistrates retired, and on their return the *Mayor* said the Bench had decided on a conviction; but although they had the power to inflict a penalty of £20, they did not intend to do so, but were content to mark their sense of this peculiar case by fining the defendant £1, including costs; and if he wished to appeal, every facility would be given him for the purpose. As the heifer was recovering, she would at once be given up to the defendant.

Mr. Gaisford asked the Bench to grant a case, to which their worships acceded, the Mayor adding that the magistrates were of opinion that Berridge had only done his duty.—*Worcester Herald.*

THE

VETERINARIAN.

VOL. XXXVI. No. 424. APRIL, 1863. Fourth Series. No. 100.

Communications and Cases.

RUPTURE OF THE COLON OF A HORSE, WHICH, IT IS SUPPOSED, HAD TAKEN PLACE SEVERAL DAYS BEFORE DEATH.

By Professor Varnell, Royal Veterinary College.

I have been favoured with the details of a *post-mortem* examination, and also a brief description of the symptoms observed shortly before the death of an aged cart-horse, the property of a gentleman in Essex, which possess such an unusual degree of interest as to warrant their publication.

With reference to the *post-mortem* appearances, a perfect reliance may be placed on the statement that I have received from Mr. Thomas Billington, M.R.C.V.S., who instituted the examination; but with regard to the correctness of the information which he received from those who had the care of the animal previous to its death, this cannot be equally vouched for. It will be seen from the following statement that great doubt must exist with reference to the period the rupture of the colon took place, although it may be inferred that no doubt existed in the mind of Mr. Billington on this point; and it is on this account, at least I so consider it, that its importance to the veterinary surgeon, in a practical point of view, chiefly depends. I also think that a due consideration of the particulars of this case, in connection with veterinary medical jurisprudence, may be valuable. Mr. Billington writes to me as follows:

"Henham, Essex;
"*January* 13, 1863.

"Dear Sir,—On the 27th of December, 1862, I was requested to make a *post-mortem* examination of a bay cart-

horse, the property of Mr. James Perry, of Chickney Hall, in this county, that had died on the previous day. After laying open the abdomen, by making a longitudinal incision through its parietes from the pubes to the sternum, I commenced to remove the intestines, and in doing so was surprised to find their peritoneal surface thickly covered with ingesta, and a large quantity of fluid in the peritoneal sac. Observing this, I could come to no other conclusion than that a rupture had taken place in some part of the intestinal tube. On scraping the extravasated fæcal matter from the surface of the peritoneum, I found that extensive inflammation had existed throughout its entire extent, and particularly at that part of the membrane which is reflected over the parietes of the abdomen. I next proceeded to examine the course of the intestines, and in doing so I found a rupture of the colon to the extent of four inches; and, judging from the nature of this opening, I was inclined to think that for a time it was quite small, but had gradually increased to the size I have mentioned.

"Upon making inquiries as to the state of the horse's health immediately previous to his death, I was informed that he first appeared unwell on the 19th, being about eight days before his death, but that nothing particular was observed about him beyond his having refused his food that morning. He was kept from work three or four days, his appetite still continuing much impaired, besides which, as explained, nothing was noticed to attract the owner's attention. Mr. Perry, thinking that if he sent the animal to work he might do better, he was on the 22nd put to his usual labour, at which he continued up to the 24th without evincing any marked incapability to perform his duty. The horse-keeper, however, informed me that he scarcely ate anything from the 19th up to the 26th, being the day he died.

"I further inquired whether the horse appeared to be in pain at any time during his illness, or whether he showed symptoms of being 'griped.' In reply, I was informed that no continuous pain had been observed, although at times he seemed to be 'griped,' but not sufficiently so as to cause any alarm, and that he passed his fæces and urinated as usual.

"All cases of a similar kind that have come under my notice have always been attended with considerable pain and uneasiness, such as is evinced in colic or inflammation, and death has always been the result in a few hours. But here we have a horse ailing for a period of eight or nine days with the whole of the peritoneum thickly covered with ingesta, and the abdomen

almost filled with fluid, and yet evincing no symptoms of pain, or at least not to such an extent as to attract his owner's attention. That the rupture *must* have existed for some time I think is evident, from the quantity of ingesta that had passed through the opening; but why there should not have been some marked symptoms indicative of peritonitis, I am at a loss to say, as also I am to account for the length of time the animal lived under such peculiar circumstances.

"If you will be kind enough to favour me with your opinion on the case, I shall take it as a great favour.

"I am,

"Yours respectfully,

"THOS. BILLINGTON.

"To Professor VARNELL."

In discussing the particulars of this case, it seems to me that the principal points to be considered, and these are those which we may infer Mr. Billington is desirous of having an opinion upon, are—1st. At what period during the illness of the horse did the rupture of the colon take place? 2ndly. If it occurred on the 19th or 20th, why was it not indicated by symptoms which would have suggested to the mind of the most common observer that the horse was labouring under some painful and important disease? 3rdly. Is it in accordance with the experience of any of the members of our profession for a horse to live a week or more with ruptured bowels and an extravasation of ingesta, to the extent alluded to by Mr. Billington? 4thly. Are the symptoms of a ruptured colon, or other parts of the intestines, in some instances, so ambiguous as to puzzle the most experienced to diagnose them?

These questions appear to me to be important, and well worth the consideration of the veterinary pathologist. There may be those who feel themselves able to solve some or all of them, and if so, their opinions would be much desired. For my own part, I feel that whatever opinion I may offer in the solution of any of these questions must be accepted as being far from conclusive. With regard to the first question I have suggested, I incline to the opinion that the rupture of the colon did take place as Mr. Billington thinks it did, namely, several days before the horse died. I have a strong recollection, although no memoranda, of two or three instances of horses that had died from disease of a similar nature, and upon examination after death it was found that a rupture of the bowel had taken place. But in these cases the symptoms were diagnostic of great abdominal pain, and I well remember the surprise evinced by those present that

the animal should have lived so long after it was thought the rupture must have taken place.

The second question appears to me to be the most difficult to answer. I cannot but think that the horse laboured under the usual symptoms attending such diseases, only they were overlooked by those who had the charge of him. If this was not the case in this instance, then I should infer that the absence of acute pain, attended with corresponding phenomena, must have depended upon an idiosyncrasy different from most horses. I have never met with a case to confirm this theory; still there may be some truth in it.

My answer to the first question applies equally to the third; I shall therefore leave it for some member of the profession to negative or confirm it, as his experience or observation may determine.

With reference to the fourth question, for my own part I have no hesitation in stating that, while rupture of the stomach is indicated by marked symptoms, yet, on the other hand, in similar lesions of the intestines, the symptoms are not characteristic of so much suffering, and hence the animal is likely to survive a much longer time.

ANALYSIS OF A CALCULUS REMOVED FROM THE URETHRA OF A HORSE.

By Professor R. V. Tuson, Royal Veterinary College.

The chemical literature of calculi and urinary deposits peculiar to the lower animals is, even at the present day, excessively meagre and imperfect. It appears to me exceedingly probable that the results of carefully conducted *quantitative* analyses of such substances would not only be interesting in a purely scientific point of view, but would likewise be a source of useful information to the practitioner of comparative or veterinary medicine.

I may observe that I have set myself the task of making such analyses as these in my leisure moments, with a view, as I hope, at some future time to publish the results of my labours.

In order to carry out the investigation completely and successfully, it will be necessary, however, to examine a very great number of calculi, from all classes of animals. May I hope, then, that any gentlemen who possess concretions

or deposits of this description will kindly place them in my hands, either as a loan or as a gift? Those which were to be regarded as loans would simply have a sufficient quantity removed for analysis, and be at once returned to their owners.

PHYSICAL CHARACTERS OF THE SPECIMEN IN QUESTION.

The calculus, as received, consisted of many fragments, the total *weight* of which amounted to 550 grains, or, as nearly as possible, one ounce and a quarter avoirdupoise.

The *colour* of the fragments varied from pale drab to ochry brown.

The calculus was exceedingly hard, as was shown by the great difficulty experienced in endeavouring to pulverize the fragments.

Chemical Analylis.

a. Qualitative.

1. Heated to redness on platinum foil, the calculus soon chars, and emits the odour of burned feathers, phenomena which indicate the presence of nitrogenized organic matter (mucus).

   By far the greater part of the calculus consists of inorganic materials, which is shown by the bulk of the incombustible residue left on the platinum foil, being apparently equal to that portion of calculus originally experimented upon.

2. *Nitric acid* dissolves nearly the whole of the calculus, and its solution is accompanied by effervescence. The gas evolved forms a white precipitate with lime-water, which is indicative of the presence of *carbonic acid*.

   That part of the calculus which is insoluble in nitric acid consists of *fibrous organic matter*.

3. *The solution of the calculus in nitric acid gives—*

   a. No precipitate with excess of ammonia, proving the absence of phosphates.

   b. A white precipitate in the ammoniacal solution with oxalate of ammonia, indicating the presence of *lime*.

   c. A white crystalline precipitate on adding phosphate of soda to the solution filtered from the precipitate of oxalate of lime, indicating *magnesia*.

4. *Water* dissolves a minute quantity of the calculus. When the aqueous solution is evaporated nearly to dryness, mixed with a few drops of hydrochloric acid and bichloride of platinum, and then allowed to stand for a few minutes, a yellow crystalline precipitate forms, proving the presence of *potash*.

   [Note.]—The calculus did not contain any ammonia.

   The yellow potassium precipitate was collected on a filter, and the fluid which passed through the filter communicated a bright-yellow colour to the flame of the blowpipe, thus showing the presence of *soda*.

5. *Hippuric acid* was carefully tested for, but not detected.

6. *Carbonic acid* was the only acid discovered.

From the results of the qualitative analysis of the calculus, we evidently arrive at the conclusion that it consists of a mixture of the carbonates of lime, magnesia, potash, and soda, with organic matter.

β. *Quantitative.*

Three or four determinations were made of the amounts of lime, magnesia, and carbonic acid (the principal ingredients), contained in as many different fragments of the calculus, and in most cases the results differed considerably from each other, thus proving that the concretion did not possess a homogeneous composition. However, the following tabulated statement may be taken as representing correctly the average or mean proportional weights of the components contained in one hundred parts of the calculus:

Carbonate of lime	54·32
„ of magnesia . . .	14·75
Carbonates of potash and soda . .	traces.
Organic matter	28·26
Moisture	2·67
	100·00

ON SOME OF THE DISEASES OF THE STOMACH AND INTESTINES OF THE HORSE AND OTHER ANIMALS.

By Professor Brown, M.R.C.V.S.

(*Continued from p.* 68.)]

Chronic Diarrhœa.

Much difference of opinion seems to prevail as to the precise force of the expression chronic applied to disease, whether it properly refers to an impassive affection likely to be of long duration, or to a malady that has already continued for a considerable period; whether, in short, a chronic disease may commence independently and at once as a specific derangement of a function or an organ; or whether it must have been existent for a certain time before it can be said to have acquired the right to the title. The original word seems to sanction the idea of previous existence and duration, and doubtless the popular interpretation is founded upon this notion. It may, however, be objected that, at whatever stage a disease may become chronic, it must have a commencement, and that, consequently, as far as time of duration is concerned, nothing definite is asserted; and further, as many affections called chronic present the same general features from the first, it would be impossible to state at what precise period the word chronic would be applicable, whether after a week's or a month's or a year's continuance; while, by applying the term only to a certain degree of disease, we leave open the question of duration, and preserve a constant relation between the three terms, acute, subacute, and chronic, applied to three degrees of force or activity of disease, which they will express by comparison, as nearly as possible.

This definition of the term chronic we propose to accept for the discussion of the question before us, and hence to speak of chronic diarrhœa as that form of the disease characterised by the absence of those symptoms of activity which indicate the acute or most active, and the subacute or intermediate. Chronic diarrhœa may arise from debility of the vessels and follicles of the mucous membrane, permitting a free exudation of fluid into the canal, and causing habitual

diarrhœa, not, however, of a serious character, as the abnormal condition here consists rather in the altered condition of the evacuations than in any excess; the great cause of exhaustion is, therefore, absent.

A generally irritable state of the membrane, which renders it particularly susceptible to excitement, even from the contact of the ingesta, will lead to excess of secretion and diarrhœa; in these cases the symptoms are increased upon the consumption of any indigestible or stimulating food, and also by exposure to atmospheric changes.

Local excitement from ulceration of any portion of the intestinal membrane, or from disease of the mucous glands—those of Peyer being frequently found in a morbid condition in dysentery in the human subject—may lead to an extension of the irritation in a degree proportioned to the development of the local disease.

Derangement of the liver may be considered as the most constant cause of chronic diarrhœa, particularly in cattle; and, considering the function of the gland as an organ of elimination, there is no cause for surprise in the circumstance of a diseased condition of its secretion producing disturbance of the intestinal fluids with which that secretion is immediately combined; we should naturally expect that organic disease or functional disturbance in the liver would lead to impairment of the digestive process, and ultimately to a depraved condition of the blood, and, by consequence, of all the secretions.

Chronic diarrhœa from debility of the vessels and secreting follicles of the membrane is not uncommonly noticed in animals suffering from anæmia, a tendency to diarrhœa from the action of insignificant causes being one of the concomitants of this condition.

Irritability of membrane is apparently perfectly compatible with good condition, appetite, and general health, a fluid state of the evacuations being often the only indication of disease present. It is fair to conclude that an uninterrupted continuance of this element would occasion systematic disturbance, but that it may exist for some weeks without perceptible mischief is practically certain.

Ulceration of the membrane we have occasionally met with in cattle after a protracted continuance of so-called dysentery (rot), and once by accident in an old horse, with whose history we are unacquainted. Whether or not disease of the glands may be a cause of diarrhœa has not been determined by veterinary pathologists, although there is every probability that such is the case. Ulceration, it is stated, is indicated

by admixture of blood with the matter discharged; but this symptom we have failed to notice under such circumstances, while, on the other hand, we have observed blood mingled with the dejections when no ulceration existed. Rupture of a few smaller vessels would, of course, explain this occurrence; nor would the symptom be particularly alarming nor diagnostic of ulceration, unless it were tolerably constant.

Derangement of the liver appears to be general in those instances of obstinate diarrhœa so frequent among cattle. The disease is distinguished at first by a simple fluid state of the evacuations, persisting in spite of the usual domestic remedies; the appetite for some time continues unaffected, nor is any great diminution of milk or loss of condition apparent. Shortly, however, the secretions suffer; the skin becomes harsh and adherent, the milk is diminished, the appetite irregular, and loss of condition perceptible; ordinary medicines are still employed, without any permanent result; the animal probably is turned out to take its chance, and remains until it assumes the condition of a living skeleton, and ultimately dies from exhaustion; the termination, however, may be long in arriving, especially if the animal feeds tolerably well. We have known diarrhœa of this kind continue for seven or eight months, without cessation, before death took place, the patient meanwhile eating a moderate quantity of provender, and seeming to suffer no pain, although invariably languid and spiritless.

In *post-mortem* examinations of these cases appearances not unlike, in many points, those of rot in sheep will be noticed; for example, entire absence of fat in those situations where in health it is most abundant; infiltration of serum into the areolar tissue, the prevalence of a yellowish tint of the internal structures, pallor of muscles, with softening and discoloration of the liver. The membrane of the intestines is usually injected, and covered with a thick, discoloured mucus, which adheres so firmly to the epithelium as not to be easily removed without it. The bile is generally thin, semi-transparent, and dirty in colour. The term "rot" is often applied to the disease, and not inaptly; probably it is to be preferred to the name "dysentery," which is sometimes employed to distinguish this form of diarrhœa. The presence of bubbles in the matter voided from the intestines is considered by some to be a very serious symptom; but, in reality, there seems to be no foundation for such an opinion, if we may judge from the instances in which we have noticed it.

Treatment of chronic diarrhœa will be varied according to the predominance of certain pathological elements.

In diarrhœa arising from debility, it is so seldom that any direct attempt will be made to stay the affection, so long as the evacuation is not excessive. Tonic medicines and proper dietetics, suited to the condition of the animal, will suffice to effect all that is necessary under ordinary circumstances; but a profuse and frequent evacuation, in the case of a debilitated subject, it must be remembered, is almost certain to terminate fatally; to arrest it, therefore, by the use of alkalies and astringents, is the surgeon's duty. The difficulty seems to be that the patient will not meet with proper consideration, from the apparent simplicity of the malady and the ordinary absence of pain or derangement for some time, even until a fatal prostration is established. Among the astringents that may be used with success we have reason to speak in favour of tannin, alum, and catechu. Either of these given in combination with chalk and opium, in the form of powder, ball, or draught, by the addition of linseed tea, will constitute a sufficiently potent remedy, and, by judicious arrangement of the dose, may be continued for some time with safety.

Diarrhœa resulting from irritability of the mucous membrane will seldom require the aid of astringents at all; chalk and opium are very useful medicaments; aconite may be administered. Should pain occur, counter-irritation to the spine or abdomen may be advisable, when the disease is very obstinate; and, under all circumstances, a bland diet and entire abstinence from bran, beans, and green food, during medical treatment. Should the diarrhœa be distinctly traced to the consumption of any irritating article of food an oleaginous purgative may properly be given at the commencement of the treatment, presuming no objection to exist otherwise to the exhibition of cathartics.

The more obstinate forms of chronic diarrhœa associated with organic disease of the mucous membrane, and probably of the glands of the intestines, are scarcely to be diagnosed with certainty, and hence their treatment is, by necessity, in a great degree, empirical. So long as the appetite remains, various remedies, as tonics, antacids, astringents, and alteratives, may be exhibited with a reasonable prospect of success; but when the animal refuses food the tone of the system continuously diminishes, and, in spite of remedial measures, an unfavorable termination is certain.

When derangement of the liver constitutes one element of the disease we have found the extract of taraxacum to be exceedingly valuable, in particular for the treatment of cattle and sheep; for the former we have usually prescribed half-ounce doses, in combination with two drachms of carbonate

of iron and two or three ounces of sulphate of magnesia once or twice a day; for sheep a fourth of the quantity will suffice. It is desirable, after two or three days, to withhold the sulphate of magnesia for a time, and recur to it if necessary, the object being to avoid its active purgative effects, while we take advantage of its influence as a saline. It will happen during the progress of the malady, chronic diarrhœa in any or all of its stages, that many phases present themselves, requiring modifications in the treatment to meet the exigencies of the moment. However varied may be the practice under different circumstances, the principles upon which it is based are easily recognised, and will never permit variety to degenerate into opposition.

(*To be continued.*)

OBSERVATIONS ON "SOUNDNESS."

By R. H. Dyer, M.R.C.V.S., Waterford.

(*Continued from p.* 140.)

Having in my last paper made a few remarks upon nasal gleet, and spoken of that system of glands termed the salivary, I will now attempt to describe the affections which more especially interfere with the functions of these glands, such as strangles, regular and irregular; fistulous parotid duct, and glanders. But before I proceed to consider these diseases, it may be profitable to get a glimpse of the anatomical and physiological bearing of the parts themselves. There are three pairs of salivary glands, or three single glands on either side, viz., the parotid, submaxillary, and sublingual. The parotid glands are the largest, and are placed near the ears; in fact, immediately below the root of the ear is found the superior part of the gland. It lies in the hollow space at the upper and back part of the head, and is bounded by the branch of the lower jaw before and the petrous portion of the temporal bone behind, extending as low down as the angle of the jaw. It is enveloped in cellular membrane, and is made up of many lobes. These lobes are connected together by means of a dense cellular structure. Each lobe has a distinct set of secretory vessels; tubuli arise from them, which at length form one main branch, the excretory duct. The parotid duct emerges from the inferior part of the gland, passes along the

inner part of the angle of the jaw, and crosses over the posterior edge of the bone just above the submaxillary artery. It pierces the buccinator obliquely, and terminates by a small eminence upon the inner surface of the membrane of the mouth, near to the second molar tooth.

The submaxillary gland is much smaller than the parotid; it lies in the space between the angles of the jaw, is loosely attached by cellular membrane, and is very like the parotid in structure. The termination of the duct will be found upon the frænum linguæ.

The sublingual gland is much smaller than the last named. It will be seen upon the under part of the tongue. Its ducts penetrate the membrane by the side of the frænum linguæ. During the mastication of the food, saliva is constantly making its way into the mouth, for the purpose of being mixed up with it, rendering the act of chewing more easy. The secretion is formed by the three pairs of glands before mentioned. The fluid obtained from the mouth cannot, however, be said to be pure saliva, because a great deal of mucus is found with it. Saliva contains animal and saline matters, free soda and sulphocyanite of potass. The saline constituents of the saliva are nearly identical with those of the blood.

The tartar found about the teeth is chiefly composed of the earthy phosphates, the particles being held together by animal matter.

The quantity of saliva formed during the twenty-four hours has been variously estimated. I think it almost impossible to know what amount is secreted. It is said that a man will secrete from eighteen to twenty ounces in a day; this, however, is mere speculation. A horse, we all know, produces a prodigious quantity, from the fact of his being engaged so many hours in the act of masticating his food. The flow of saliva seldom takes place when it is not wanted. The saliva, having performed its duty in the mouth, passes on with the food to the stomach, and there mingles with other fluids, which further prepare the ingesta for its final destination. It is now believed by some physiologists that oxygen gas is likewise conveyed to the stomach through the medium of the saliva.

In 'Markham's Masterpiece,' one of the most ancient works on diseases of the horse, we read, under the head strangles, —This is "but a mean inflammation of the throat, proceeding from some choleric or bloody fluxion, which comes out of the branches of the throat-veins into those parts, and there breedeth some hot inflammation, being stirred up either by some great winter-cold, or cold taken after labour. It is a

great and hard swelling between the horse's nether chaps, upon the roots of the horse's tongue, and about his throat; which swelling, if it be not prevented, will stop the horse's windpipe and so strangle or choke him; from which effect, and none other, the name of the disease took its derivation. The signs of this disease, besides the apparent sign thereof and the palpable feeling of the same, are, the horse's temples of his head will be hollow, and his tongue will hang out of his mouth, his head and eyes will be swollen, and the passage of the throat so stopt that he can neither eat nor drink, and his breath will be exceedingly short. The cure thereof, according to the most ancient farriers, is, with a round, small, hot iron, to thrust a hole through the skin on both sides the wezand, and then after it beginneth to matter, to mix butter, tannen water and suet, together, and every day anoint the sore therewith till it be whole."

Markham speaks of various modes of treatment besides this, but he sums up the whole by recommending his own :—"..... perfume his head, by burning under his nostrils either frankinsense or mastic, &c." In speaking of irregular strangles, or vives, as the ancients termed it—he says: "And the cure, according to the opinion," &c., &c., "is thus :—If you see the kernels begin to rankle and swell, you shall take the horse's ear, and laying it down along the neck of the horse, at the very end or tip of the ear cut a hole through the skin of the neck the length of an almond, or better; and then with a crooked wire pick out all those kernels which you find inflamed; which done, fill the whole full of salt; then about the end of three days you shall find the sore beginneth to matter....." This appears to be about the substantial part of the treatment of these complaints in those days. Coming down to our own time, we find in 'Blaines' Outlines,' almost all that can be said or written about strangles. Each and every individual who is in the habit of writing his observations upon the subject finds something new in every case he is called upon to treat, no two cases being exactly the same. Blaine quotes from that able writer, Hurtrel D'Arboval. This gentleman ridicules the idea of its being a congenital and constitutional affection. There cannot be much doubt that almost all animals are affected by this form of disease at some time in their lives, much in the same way as children are subject to measles and other complaints. I also think there can be but little doubt as to its constitutional character. I will relate a couple of instances that occurred in my practice, which will, I think, go some way to corroborate the opinion of those who believe it to be a constitutional affection. A yearling colt was presented

for castration at a particular season, when many colts were lost both in this and other countries, after castration), and I believe this one was unfit for the operation, as he was not looking healthy. A second was presented at the same time (this colt was a year older). I was not desirous of operating upon either. The yearling was sent home for a week, but the two-year-old was kept under my own eye. The first named was brought again in a week; still, no change being apparent, I directed that he should be taken home for another week. He was brought a third time, and again objected to. The owner of this animal believed I was playing with him, and felt annoyed at being treated, as he thought, in a strange and unaccountable way. I endeavoured to explain, but I did not however succeed in gaining his confidence, for he thought (to use his own words) I was humbugging him. With this feeling, he took the colt to another veterinary surgeon, and had him castrated without further delay, the "vet." as I was informed, chuckling over his good fortune at having gained *my loss*. The yearling was submitted to the ordeal and soon paid the penalty of the mistake, as he died within three days after the operation was performed. The two-year-old colt I had for three weeks under my own care, when I declined to operate, and sent him home. In a week or two after this I was called to see him, as he was suffering then from strangles; besides which the whole tegumental system manifested disease of an eruptive character, from the head to the hind feet. When this disease passed off, he was operated upon, and did well.

I think we may learn a good lesson from these two cases. In all probability the first-named colt was "breeding strangles," and under such circumstances the operation was too sudden and severe a trial, as it produced a shock to the system from which the colt could not recover. It is very likely that the two-year-old colt would have shared the same fate had the operation been performed at the time he was first presented.

Youatt, writing on strangles, concludes in these words:—"To this conclusion, then, we are warranted in coming—that strangles is a specific affection, to which horses are naturally subject at some period of their lives, and the natural cure of which seems to be a suppurative process. From some cause, of the nature of which we are ignorant, this suppurative process usually takes place in the space between the branches of the maxillary bone, and, occuring there, it appears in the mildest form, and little danger attends. When the disease is ushered in by considerable febrile disturbance, and the

suppuration takes place elsewhere, the horse too frequently sinks under the attack."

Mr. Percivall has much to say upon this affection, and pays a high tribute to the opinions of the late Mr. Castley and Mr. Hales. All, however, tends to the same end. I think all persons believe the disease to be one which every colt is liable to at some period of his existence, and that time has been pointed to as falling between the first and fourth year of his age. I likewise think that, as a general rule, writers upon this, as well as many other subjects, are too anxious to ignore a fact, if it can be shown there any exceptions. Because one writer happens to know that a horse has lived up to four years old without his having been known to be affected with strangles in its severe or any other form, it does not go to prove that all animals are not subject to the disease, or that it is not a constitutional affection, any more than the fact of a lady of my acquaintance having lived up to the age of forty-five without having had measles. I say these individual instances should be taken no notice of when speaking of constitutional diseases. Another writer, who is a strenuous advocate for contagiousness, will in nearly every case endeavour to prove that such and such a disease is contagious, merely from the fact of its being known that the disease is prevalent at some particular season. I don't know that we need go beyond the present one, as for many weeks past influenza, both in its mild and severe forms, has been very prevalent here and elsewhere, among the human family; old and young, rich and poor, have suffered from attacks of it, and in most cases we find the attacks have become tedious and of long duration, not being easily got rid of. Some persons have suffered this year who have never been known to have coughed in their lives; yet this I say is no proof of its contagiousness. Up to the present time but few cases have been presented to me for treatment in the horse, our patients having as yet escaped coughs and colds. Strange to say, for some years past the human family seemed to have taken precedence in these affections, and after the disease has had its own sway amongst men, women, and children, then the equine race have received their share. Such, at least, has been the result of my observations.

Most veterinary surgeons will, doubtless, view strangles as an affection of the entire system, assuming a febrile character, more or less severe, as the case may be, and having a tendency to the production of an abscess in the submaxillary glands. Why these glands should be more susceptible than others has not been satisfactorily demonstrated, any more

than the skin eruption in measles. It has not been explained, I think, why measles should show themselves in the precise manner they are known to do. Such is the fact, however, and no person has attempted to deny it. There are certain diseases in man in which the lymphatic glands of the groin are affected. These become enlarged, and inflamed, and ultimately suppurate. It will not be said that these glands were *primarily* affected: nay, other parts were contaminated, and they became diseased *sympathetically;* and in most cases, although it is a somewhat troublesome and annoying affair, the patient is not so liable to be left with that tiresome complaint, *gleet*, when the glands are affected, as when the complaint is confined to the mucous surfaces—and so it is with the strangles. In my practice I have found that in all cases where suppuration of the submaxillary glands has taken place in a regular manner the termination of the disease has been speedy, and the patients have returned to health without leaving behind any unpleasant sequel.

In the *Veterinarian* for 1842, page 154, will be found a case recorded by Mr. C. Percivall, entitled "Disease of the Lungs and Liver and Abscess of the Cæcum, the Sequelæ of Strangles." I will transcribe the communication:—"A bay gelding, four years old, under treatment for strangles, which had suppurated in the usual manner, was taken suddenly ill on the 13th of November, 1837, with symptoms of gripes; but they very soon went off, and he was to all appearance quite well. In the evening he became again very uneasy. There was a small, quick pulse; respiration short and quick; coldness of the extremities; and he was frequently turning his head round to his flank. Six quarts of blood were with difficulty withdrawn, upon which he broke out into a cold sweat, that ran from him in considerable quantity. Stimulants were applied to the surface of the abdomen, legs, &c.

"On the following morning his breathing was much more tranquil, and he appeared, upon the whole, better. Towards the evening, however, he became decidedly worse again; very restless; frequently up and down; respiration short and quick; extremities and surface of the body icy cold, accompanied with cold sweat. The venesection was again had recourse to, but it was with the greatest difficulty that four quarts of blood could be extracted. He died in the course of the night.

"*Post-mortem appearance.*—The right lobe of the lungs inflamed; the cæcum inflamed, and the coats thickened to a very considerable extent, together with an abscess containing a pint and a half of pus. The liver completely disorganized."

I merely intended to quote a passage or two from this case, but as I proceeded, I found it of so interesting a character—the treatment in 1837 so opposed to what it is in 1863—that I considered the case worth transcribing *in toto*. I am sure I need scarcely remark that strangles in any form is an unsoundness.

(*To be continued.*)

ABSCESS IN THE BRAIN OF A HORSE.

By W. A. Wheatley, M.R.C.V.S., Reading.

Dear Sir,—I have this day sent, *viâ* Great Western Railway, the brain of a horse, and if you will kindly examine the same, I shall esteem it a favour.

The history of the case is as follows :—The animal was the property of Mr. Giles, of the Wallingford Road Station on the Great Western Railway. About a month since, he had an attack of strangles, for which he was treated by a farrier in the neighbourhood, and appeared to quite recover. Last week, however, he again showed symptoms of indisposition, when a practitioner in the locality was called in, who treated the patient for *inflammation of the kidneys*. On the 10th I was requested to see the horse immediately, and did so.

Symptoms.—The animal was lying on the right side, and quite incapable of rising, with the limbs extended. In this posture he would remain for ten or fifteen minutes, when he would make violent movements with his legs. These would be continued for some few minutes, when, becoming exhausted, he would remain quiet for a time. The pulse 46; breathing natural; extremities and skin warm; mucous membrane of the eyes congested; membrane of the nose and mouth normal; secretions healthy; nervous twitchings about the lips, and a peculiar and constant rolling of the eyeballs.

Diagnosis.—Abscess in the brain. I advised the owner to have the horse destroyed, which he at last very reluctantly consented to.

Being in the neighbourhood of Wallingford this day, I called and informed Mr. Giles of the appearance of the brain, when he told me that he had seen one of the gentlemen who had treated the horse, and who much regretted that the

animal should have been destroyed, as he was quite certain he could have cured him.

If you think the above case worthy of notice in the *Veterinarian*, please insert it. I am vexed the parts should have been sent in such a state of mutilation, but being much engaged I was obliged to leave their dissection to one of my assistants.

I should have stated that when the membranes were removed from the brain nearly an eggcupful of creamy matter escaped.

I am, dear Sir, yours, &c.

Professor VARNELL.

REMARKS ON THE ABOVE CASE BY PROFESSOR VARNELL.

A few cases of abscess in the brain of the horse are recorded, but I am not aware of one in which the history of the case is more satisfactory, or the cause less ambiguous, than this; and on this account its value, especially to the junior members of our profession, chiefly depends.

It would hardly be expected that the inexperienced practitioner, however well informed theoretically he might be, would have ventured to pronounce an affection similar to the above to depend upon an abscess in the brain. Experience, however, in the treatment of the disease in horses designated strangles, proves how great is the disposition that exists, in many instances, to the formation of a succession of abscesses, not only in the usual site, viz., between the branches of the lower jaw, but also in other parts of the body. Sometimes they will form rapidly, at other times very slowly. In some instances a secession to their formation will be observed, when, quite unexpectedly, the horse becomes dull and feverish, and, upon examination, some part of the animal is found to be tumefied, hot, and tender, and in a few days another abscess will have formed. This being the case, some little time ought to be allowed after a horse has apparently recovered from the disease before he can be pronounced wholly exempt from its effects.

It may be difficult to explain why this affection thus behaves itself, but Mr. Wheatley's long experience having proved to him that such occasionally does take place, and coupled with the symptoms that presented themselves, he was enabled to diagnose his case with confidence. In a letter I have since received from this gentleman he says—"Last year I had two very similar cases, both following strangles,

which gave me great confidence in coming to the conclusions I did in this instance." The symptoms mentioned by Mr. Wheatley in the above letter, such as a peculiar rolling of the eyes, twitchings of the muscles of the face, conjunctival membrane unduly injected, partial coma alternating with convulsive struggles, and comparative slowness of the pulse, are of themselves diagnostic of cerebral disturbance; and when it is known that the horse had only a month before been labouring under an attack of strangles, then the evidence of there being an abscess in or upon the brain becomes very strong.

In this case the symptoms were, collectively, sufficient in Mr. Wheatley's opinion to warrant him in advising the owner to have the horse destroyed, and the result of the *post-mortem* examination certainly proved the justification of such a procedure. I should, nevertheless, caution a junior member of the veterinary profession in too hastily adopting such a course wholly on his own responsibility. His reputation will be safer by allowing the disease to take its course. In some brain affections the lesions discovered after death may not be of that character which would convince the owner of the horse that he could not have survived their effects had he not been destroyed. And further, it is possible that some unfriendly practitioner may choose to assert in the presence of the owner that the animal might have been cured, or perhaps would have recovered if the disease had been allowed to take its course. These remarks are, I think, worthy of consideration by the young practitioner, and I therefore trust I shall be excused for making them; doubtless by many they will be thought to be superfluous, but the nature of this case, and the circumstances connected with it, have induced me to make them.

EXAMINATION OF THE BRAIN.

The organ was not so much mutilated as might be inferred from Mr. Wheatley's letter. The situation of the lesions and the character of the disease were so palpable that they could be determined upon without any difficulty. There were two abscesses in the brain, one at the supero-posterior, the other at the postero-inferior part of the left hemisphere of the cerebrum, neither of which, however, appeared to have been of long standing. The uppermost one especially looked as though it had been recently formed. I think it would be more consistent to describe it as diffused suppuration, as its boundaries were not at all defined. Not so, however,

with the lowermost one; here I noticed a distinct cavity, capable of holding quite an ounce of matter, and having walls moderately firm and smooth. The blood-vessels of the pia mater of the brain were filled with stagnant blood, and the plexus choroides of the fourth ventricle was so much thickened from interstitial deposition as to suggest the idea that the undue pressure it would impart to the medulla oblongata might influence voluntary motion, and which, to a certain extent, would account for the horse's inability to rise when in a recumbent position.

SALIVARY CALCULI IN THE HORSE.

By G. A. Drewe, M.R.C.V.S., Abingdon.

On the 26th of last month I left with Professor Varnell at the Royal Veterinary College two salivary calculi, which I had taken from the parotid duct of an aged gray-mare, the property of a small farmer of the name of Wallace, residing at Oare, near this town.

The animal was brought to me on the 11th of December on account of a difficulty in mastication, and on examination I detected the presence of the above-mentioned calculi. An effort was made to force them from the termination of the duct, but finding that course not practicable, I cut down on the enlarged duct (making an incision about an inch and a half in length), and very easily extracted them. A couple of sutures were inserted, and some styptic powder sent to dress the wound with. There was a considerable escape of saliva for the next week; but, nevertheless, the healing process went on satisfactorily. On the 22nd the actual cautery had, however, to be applied.

I called on January 9th, in company with my friend Mr. Naden, of the Royal Artillery, and found the wound was perfectly healed, and the mare much improved in condition.

ANALYSIS OF THE SALIVARY CALCULUS BY PROF. TUSON.

The calculus submitted to examination was one of the two removed from the salivary duct. Both calculi were more or less oval in shape, about an inch and a half

long, and three quarters of an inch wide. They were nearly white, and the one analysed weighed 210 grains. It was so hard as to be capable of receiving a high polish, and could only be cut or scraped with a knife with difficulty.

Analysis 1. *Heated on platinum foil,* a very slight charring, accompanied by a faint odour resembling burning feathers, was observed.

2. *Hydrochloric acid* dissolved all but a minute fraction of the calculus. The solution of the calculus was attended by effervescence, and the gas evolved rendered lime-water milky.

3. *Ammonia* added in excess to the solution of the calculus in hydrochloric acid produced no precipitate even after stirring the mixture and allowing it to stand.

4. *Oxalate of ammonia* gave with the ammoniacal solution (3) a bulky white precipitate.

5. *Phosphate of soda* added to the solution filtered from the oxalate of lime gave a minute precipitate.

6. No alkalies were discovered.

From the results of the foregoing analysis we arrive at the conclusion that the calculus was composed of carbonate of lime, mixed, however, with very small quantities of nitrogenized organic matter and carbonate of magnesia. The joint amount of the two latter substances appeared to be so small that it was not thought desirable to make a quantitative analysis of the concretion.

ENORMOUSLY ENLARGED SPLEEN OF A HORSE.

By H. R. Perrins, M.R.C.V.S., Worcester.

Dear Sir,—In accordance with your wish, I have obtained the history of the horse, the spleen of which I sent you.

The owner, riding seventeen stone, had hunted him for about twelve years, during which period his health continued apparently good until last August, when his near fore-leg and shoulder became swollen; a dose of physic, &c., however, soon reduced it. In November the near hind-leg was similarly affected, but it also soon subsided, and nothing more was noticed until the first week in December, when general emaciation set in, and the animal soon became very

thin, refused all food, and would not lie down. This continued until about ten days before his death, when hæmorrhage commenced from the near nostril; at first slightly and intermittent, but at last more profuse and continuous. The pulse ranged from 65 to 70, being very weak and irregular; the mucous membranes were very pallid, and about a fortnight before he was destroyed the near flank was observed to be fuller than the off. His food was four quarts oats, with a double handful of beans and the usual quantity of hay, daily; his height was 15½ hands; his shape almost faultless, he being nearly thoroughbred. As he was a favorite and an old horse, being six or seven and twenty years old, he was not subjected to any treatment, but destroyed. Perhaps it is worthy of note that the parts affected were all on the near side. In the *post-mortem* examination I found all the internal organs healthy, the spleen excepted.

I remain, dear Sir,
Yours truly.

To Professor VARNELL.

REMARKS ON THE ABOVE CASE BY PROFESSOR VARNELL.

All vertebrated animals possess a spleen, but I am not aware that they have any other organ which varies so much in form and size as this does. And not only is this the case in animals of one species as compared with those of another, but even in animals of the same species its outline is found to be very different. In some few exceptional instances I have met with it partially divided by fissures in one or more places; at other times it is divided into two or three parts, which are only connected together by blood-vessels and membranes. In some animals it is so very small that in a physiological point of view it is difficult to understand how it can be of any importance in the animal economy.

The spleen of the dog is of considerable size, yet we have heard (not witnessed) of its being removed entire without causing the death of the animal, or apparently any inconvenience, not even a loss of flesh. The spleen also varies in size under different circumstances during perfect health; as, for example, it may be much larger a few hours after a full meal is taken than it was when the stomach and intestines were empty. But we have reason to suppose that its volume is augmented to a far greater extent under circumstances bordering upon disease. Temporary congestion of the lungs or liver, or from the blood being driven from the skin and other remote parts of the body by cold, or from their not being

duly supplied with this fluid, would also tend to the engorgement of this organ. When the blood is unequally distributed over the body the spleen may act as a reservoir into which it would pass, without endangering the organs whose functions are necessary to be continuous to maintain life; therefore to them the spleen would act as a safety-valve. This, I have no doubt, is one of its uses, but it has also a far higher function to perform in regard to the blood itself. I believe it is pretty well known that when the spleen is removed, or so far structurally diseased as not to be capable of performing any of its uses, that the relative proportion of red and white blood-cells becomes very much altered—the white increasing and the red decreasing in number. Other changes are also said to take place in the blood which render it unfit for normal nutrition. Its physical properties are altered as well as its relative constituents; it is paler in colour, and its specific gravity is diminished.

Its unfitness for the due support of the tissues of which the animal body is composed seems to accord with the statement made as to the emaciated condition of the horse from which the spleen in question was taken. Not so, however, with the statements I have referred to of the organ having been extirpated and no perceptible loss of flesh supervening, or with those instances in animals in which the spleen is so very small as compared with the bulk of the animal to which it belongs that no physiological importance can be attached to its presence. In the latter instances I cannot but think that some other provision exists for that requisite renovation of the blood which is believed to be performed by the spleen; but with regard to the former statements, I think they must be looked upon as requiring further proof.

We have had very many opportunities of examining diseased spleens, but I have never seen one so large or weighing so much as the one sent by Messrs. Rose and Perrins. It weighed no less than *seventy-six pounds*. About fifty-six pounds is the largest I have ever before seen. The magnitude of this specimen is wonderful, when we consider that in a normal condition its weight would not be more than from three to five pounds.

Similar instances of abnormally enlarged spleens are recorded as having taken place in the human subject. Morgagni mentions a case in which this organ had increased to the enormous weight of thirty-five pounds. Our surprise at the spleen becoming of this magnitude is not so great when we are informed, on good authority, "that a healthy spleen of a sheep, weighing only four ounces, can be made

to contain thirty ounces of water." And also, "that the portal vein had been tied, and the spleen of the animals, that previously weighed only two ounces, has been found to increase to twenty ounces." These facts will give us some idea of the capacity, through the extensibility of this organ, it is capable of attaining, even in its normal condition; and it further suggests the almost unlimited size that may take place by persistent pressure and traction upon the tissue of which the framework of the organ is chiefly composed. It may be asked, how can this force be applied so as to produce the effect alluded to? Obstruction in the portal veins or in the hepatic circulation would be nearly equivalent to a ligature passed round the vena porta; and a similar effect, but not quite so direct, would be produced by any impediment to the flow of the blood through the posterior vena cava between the liver and the heart. Disease of the heart or the lungs, whereby the flow of blood through these organs becomes impeded, would tend to retard its return from the spleen, which, from its extensibility, would yield to the force imparted to the blood by the heart in its passage through the splenic artery. Hyperæmia of this organ may take place from other causes than those I have alluded to; at least, I venture to suggest that it can. Muscular fibre is known to exist in the trabeculæ, at any rate, in the smaller ones of the spleen of most animals, also in the middle coat of the blood-vessels; and as this tissue is supplied with nerves whose force determines the contractile power of the muscular fibre, and as the influx of blood into the organ, as well as the power of expelling it into the vein which conducts it to the vena porta, is greatly modified by this tissue, we can predict what the result would be if this force be withdrawn, and which we can understand might be the case. Disease of the splenic plexus of nerves to an extent sufficient to spoil them as carriers of nervous force would destroy muscular contractility, the effect would be atrophy of this tissue, relaxation of the coats of the blood-vessels and of the trabeculæ also, with dilatation of the former and elongation of the latter, and thus the admission of more blood into the organ, and a diminished capability of getting rid of it, would be the consequence. Such a relaxed condition of the tissues, and a want of contractility appeared to be a prominent feature in the case in question. The intertrabecular spaces were very capacious, and filled with a large amount of reddish-brown spleen-pulp, diffused through which was a quantity of a semi-gelatinous fluid.

The horse from which the spleen was taken we are told was very old, and the largest organs of this kind that I have previously heard of were also taken from old animals. Nevertheless this is not always the case; for, in many instances, I have found the spleen to be very small in old horses, not more than half its natural size, and its structure very firm. Mr. Perrins further informs us that for some time before this horse was destroyed the left flank became much enlarged, the two left legs œdematous, and the appetite much impaired; and further that loss of flesh had taken place to a considerable extent; also that hæmorrhage came on from the nostrils, which, after a time, increased in quantity. I cannot say that I have seen this phenomenon myself, nor have I ever before heard it alluded to by veterinary practitioners. But judging from analogy, I should think that it may occasionally be the case. I believe it is often found to be associated with chronic disease of the spleen in the human subject, as is also ulceration of the legs. Now, had the horse in question, been allowed to live and the swelling of the legs continued to any extent, I think it very probable indeed that ulceration would have taken place in this instance. These symptoms are diagnostic of disease of the spleen, and doubtlessly were so considered. I will now very briefly explain some of the most prominent abnormal peculiarities in this specimen. I have already alluded to its weight; its bulk can almost be imagined. It must, when in the abdomen, have extended as far back as the pelvic cavity and to the right side of the linea alba, thus, of necessity, displacing the abdominal viscera. It was of a uniform dark-purple colour, and its surface was quite smooth and even. Most of the enlarged spleens which I have seen have been more or less nodulated. Its consistence was peculiarly pulpy, and on making a section through any part of its substance the cut surfaces presented a mass of pulp of a reddish-brown colour only, which was very soft. No white lines, or spots indicating the existence of trabeculæ, or Malpighian corpuscles, could be detected. A short time after a gash was made through its substance the space became partially filled with a reddish-brown, albuminous fluid, which had oozed out of its structure. I removed a slice from the organ about one inch thick and about four inches wide; this I had carefully washed until the whole of the spleen-pulp was removed from it, leaving a whitened network, formed by the trabeculæ and areolar tissue. I was now enabled to form an idea of the size of the inter-trabecular and areolar spaces, and I have no hesitation in stating that, as compared with those of a healthy

organ, they were very large, and their boundary walls, comparatively, were very thin and attenuated.

It would have been very interesting indeed if the cause, which, remotely or immediately, tended to produce this abnormally large spleen could have been ascertained; but as this is not possible now, nor, perhaps, never could have been discovered with any degree of certainty, we may briefly notice its effects, and see if they will agree with the symptoms observed during the life of the horse. These may be considered as partly mechanical, partly pathological, and partly physiological. The enlargement of the hind leg may have been due to the pressure the enlarged spleen imparted to the iliac veins, thereby impeding the return of blood from the limb. But I cannot consider that the veins of the fore-leg could have been similarly affected. I should rather think that the swelling of that limb was due to some disease of the heart or lungs. The loss of flesh and want of appetite, I have no doubt, were due to the altered condition of the blood, which, as I have before supposed, was unfit for the support of the tissues. The paleness of the visible mucous membrane and the feeble and quick pulse are explained by the altered character of the blood, but more especially so by the large amount of this fluid that had found its way into the large reservoir, the enlarged spleen, where it partially remained.

The few remarks that I have made on this case may have a slight bearing on some of the diseases of this organ; but their want of detail as regards both the structure and function of the spleen, as well as the description of the pathological changes that had taken place, makes them of but comparatively little value; still it is a brief record of a very important and unusual case, for which we have to thank the contributors.

A COMMUNICATION FROM THE REGISTRAR OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

10, Red Lion Square.

Gentlemen,—Allow me, through the medium of your Journal, to express my thanks to those members of the profession who have so kindly furnished me with the necessary information for completing the new Register.

I need scarcely remind them how very important it is to have all Christian names inserted in full, and also that the Registrar should be supplied from time to time with informa-

tion as to any death or change of residence that may occur in their respective localities. I would further venture to suggest that, as we have now a distinct county list, the resident members should have their names regularly inserted in the Provincial Directories, so that the public may be able to recognise the members of the profession and body corporate.

I quite agree with the observations made in your "Annual Address" relative to Veterinary Medical Associations and Mutual Protecting Societies being formed in every county. This would, no doubt, very materially tend to make us more united. In addition to these, I would suggest the formation of a Metropolitan Veterinary Medical Society, the advantages of which are so apparent as to render it unnecessary for me to comment upon them.

I am, Gentlemen,
Yours, &c.,
WM. HENRY COATES, *Secretary*.

To the Editors of 'The Veterinarian.'

Facts and Observations.

A SPLEEN WEIGHING FIFTEEN POUNDS REMOVED FROM A LIVE DOG.—At a recent meeting of the Pathological Sociey Dr. Gibb showed a drawing of this spleen, which was removed from the animal in the year 1850. It was exhibited in consequence of the suggestion made at a previous meeting by Mr. Spencer Wells, of removing enlarged spleens from the human subject. The animal from which Dr. Gibb removed the tumour was five years old, and was narcotized with sulphuric ether in a few minutes. The splenic artery and fifteen other vessels were tied; very little hæmorrhage occurred. The dog lived five days, and died from cold. The tumour consisted chiefly of coagula within a large cyst, formed by the capsule of the spleen, probably originating in a kick; the gland itself was imbedded in its upper part. Dr. Gibb remarked that Dr. Crisp and others had removed the healthy spleen from dogs, and there was no reason why a diseased spleen should not also be removed.

Mr. Hulke said it had been frequently done; numerous specimens were in King's College Museum; and the animals had lived many months, apparently as well as ever.

Dr. Leared corroborated this report by a case in which he had operated with success.

Mr. Holmes spoke of a case in which a large part of the spleen had been removed through a wound in the human subject, and the man lived subsequently.

Mr. J. Croft said that in cases of death from rupture of the spleen it was not from the loss of the organ, but from peritonitis. —*Medical Times.*

Death from Hydrophobia..—An inquest has recently been held on the body of Thomas Hobbs, dock-labourer, residing in Ray's Court, New Gravel Lane, whose death took place under the following melancholy circumstances:—In February last the unfortunate man's hand was fearfully lacerated by the bite of a dog, but being dressed by a surgeon, it gradually healed. On the 2nd of March he went to work, but on the following day he became very unwell. On the 4th he became worse, the dangerous symptoms of hydrophobia had greatly increased, and it was as much as four or five men could do to hold him. He suffered indescribable agonies, and notwithstanding all that could be suggested by the collective wisdom of three medical gentlemen, the malady held its sovereignty and he expired.—*Daily Press.*

Curara in Hydrophobia.—The commission appointed at the Milan Hospital for the purpose of testing the value of curara as a remedy for hydrophobia have reported that it has failed to establish its claims as a remedy for this dreadful affection.—*Lancet.*

Deaths from Nitric Acid.—A very painful sensation has been caused in Edinburgh by the death of Mr. Stewart, one of the masters, and also of the janitor, of the Edinburgh Institution, a large educational establishment in Queen Street. Mr. Stewart was in the laboratory of the school, preparing for some chemical experiments, and while carrying a jar of nitric acid across the room it fell on the floor and was broken. He called the janitor to his assistance to wipe the floor and to endeavour to save a portion of the fluid. In this effort both unwittingly inhaled its deadly fumes. Mr. Stewart went home to dinner, unconscious of the injury he had received. After an hour or two he began to experience difficulty of breathing, and sent for medical advice, but he very rapidly became worse, and expired at two o'clock on Wednesday morning, about ten hours after the accident. The janitor was also taken ill, and though he rallied for a time on Wednesday, he afterwards sank, and expired at five

o'clock on Thursday morning. Several of the most eminent medical men in the city were called in to the unfortunate patients, but their skill proved unavailing. The case, it appears, is almost without a parallel in medical experience.

Singular Lusus Naturæ.—We have received a very remakable *lusus naturæ*, the product of a ewe, from Mr. G. T. Baldwin, M.R.C.V.S., Fakenham. It was brought forth with *three* healthy and perfectly formed lambs, itself being the first born. It possessed neither brain, spinal marrow, heart, lungs, nor digestive organs; nevertheless the blood-vessels were numerous and large, and three out of its four limbs fairly developed. The fourth limb was broader and shorter than the others, and bore a far greater resemblance to the foot of the dog than to that of the sheep, by possessing five imperfectly formed digits, three of which were of nearly equal length. The common integument, which was freely covered with wool all over, formed a pouch-like appendage at the cephalic extremity of the monstrosity, a little below which a fragment of osseous deposit existed, in which a single tusk-like tooth was placed, as in a rudimental jaw. The limbs and some other parts being comparatively well-developed, it may be asked, by what power, in the absence of a heart, was the circulation maintained for such a purpose?

Black Periosteum of Fowls.—Dr. Miche having sent to M. Flourens some of the bones of a Cochin China fowl the periosteum of which was quite black, he exhibited to the Academy the skeleton of a common fowl in a similar state, Six chickens out of a brood of twelve were stated to possess the same peculiarities.

Mr. G. H. Inskip, writing to the editor of the *Intellectual Observer*, says that they frequently found, while employed surveying in the Gulf of Siam, the common fowls purchased at Bangkok and along the coast to have apparently black bones, with dark flesh, looking as if saturated with pale-black ink.

Animal Food annually required for London.—It is calculated that the metropolis alone consumes, in the course of a year, no fewer than 270,000 oxen, 30,000 calves, 1,500,000 sheep, and 30,000 pigs, to say nothing of the flocks of fowl and shoals of fish which find their way into the same channels of consumption. The total value of the flesh annually imported into London, alive and dead, cannot be

much less than £14,000,000 annually. For the whole country we slaughter yearly 2,000,000 head of horned cattle, and about five times as many head of sheep.

Horse-flesh as Food.—A Berlin journal states that there are now in the Prussian capital seven butchers' shops for the sale of horse-flesh, and that 750 horses have been killed in the present year for their supply. No animal can be slaughtered for these establishments without a certificate from the veterinary surgeon of the police.

One is not surprised that the flesh of so cleanly feeding an animal as the horse should be resorted to as food. But as he parteth not the hoof and cheweth not the cud, the Jewish law-giver designated him unclean. There are other reasons, however, why the flesh of the animal is not eaten generally by us, which need not be particularised.

Other nations make use of the flesh; and even Xenophon tells us that the army of the younger Cyrus, when marching through Arabia, or rather Mesopotamia, by stratagem caught many wild asses, and found their flesh to resemble that of the red deer, but more tender. In Persia the wild ass was prized not only as an object of chase, on account of its fleetness, but also for the delicacy of its flesh, which made it a luxury even at royal tables.

Medical Education in Australia.—We learn from the Australian press that "the first important step towards establishing a medical school in Victoria has been taken in the foundation of a lectureship of medicine at the Melbourne University."

At no very distant day we hope to see that this wise resolve is followed by another of almost equal importance—the foundation of a chair of veterinary medicine and rural economy. A want of this kind is keenly felt in most of our new settlements, especially those where pastoral occupations form the great source of the wealth of the colony.

Origin of Cow-pox.—The Imperial Academy of Medicine of Paris has appointed a commission to inquire into the origin of vaccine.—*Lancet.*

Smallpox at the Cape of Good Hope.—Smallpox has been virulent and very fatal about Moselikatese's country. It has nearly destroyed the tribe of the Bangainwates, amongst whom the dead were so numerous that they were abandoned to the hyenas.—*Lancet.*

SMALLPOX AND VACCINATION.—Considerable alarm is felt at the increase of smallpox. The Smallpox Hospital is full to overflowing, and the temporary wards, which have been provided by some parishes, are equally so. Most of the cases occur in adults or young persons who have been vaccinated. Many questions will naturally be raised by this outbreak, especially as to the efficacy of vaccination as usually performed. Doubts will be expressed as to the amount of care taken in selecting *vaccinifers* with good vesicles, and as to the care taken to use only clear lymph, and not serum or blood, which may be made to exude by *jobbing* a vaccine vesicle with the point of a lancet. It seems to be universally felt that a large number of cases is requisite in order to enable any vaccinator to keep up a good succession, week after week; that it is a mistake to appoint too many vaccinators; and that it is better that students should learn this operation from the public vaccinators than at the hospital.—*Medical Times.*

METROPOLITAN AND INTERNATIONAL DOG SHOW.—The Directors of the Agricultural Hall Company have, at the solicitation of a large number of nobility and gentry, and encouraged also by the extraordinary success of the show of last year, undertaken to conduct and carry out a great Metropolitan and International exhibition of dogs, to take place in the Agricultural Hall at Islington, during the Derby week.

NEW CLASS OF COUNTER-IRRITANTS.—Dr. Desmartis is stated to have cured painful maladies by causing insects to sting the parts affected, and this has been practised by him, more or less successfully, for the last fifteen years. His experiments, too, have been tried on plants as well as animals. Corroborative of his views is the tradition that leprosy is curable by the poison of certain serpents, and at Havana the poison of the scorpion is considered a remedy for yellow fever. M. Gasparin succeeded in repeatedly getting rid of rheumatism by allowing a wasp to sting the part, and by the same means an attack of bronchitis was overcome by him.

FORMATION OF HIPPURIC ACID.—The production of hippuric acid, the presence of which characterises the urine of the herbivora, is due to the large quantity of carbon contained in their food. It, however, like urea, is not formed directly from the food, but is a result of the metamorphosis of the nitrogenous tissues. Its existence in urine is proved by evaporating it to one third its bulk, and then adding hydrochloric acid. In a few hours linear and branch crystals will appear.

THE VETERINARIAN, APRIL 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

SCAB IN SHEEP.—DEFECTIVE LEGISLATION.

Upon the necessity of adopting measures to limit the extension of contagious diseases among domesticated animals there cannot be, we think, a second opinion, however opposite may be the views of its advocates as to the means best calculated to effect the desired end. The continued high price of butchers' meat is, doubtless, due in part to these losses, a circumstance in itself sufficiently important to warrant the agitation of the question on public grounds. Much of late has been written on "the paying price" of stock, both to the breeder and the feeder, when compared with the returns obtained from corn; and agriculturists have been earnestly advised to convert a large proportion of their arable into pasture ground. With this suggestion we do not now propose to deal, notwithstanding its class-like aspect, nor do we intend to discuss the general question on the broad principle of public necessity. What, then, it may be asked, is our object in alluding to the subject? We answer, simply to point out a great defect which exists in our legislative enactments with reference to *one* of these diseases, and to urge the prompt adoption of means to remedy the evil.

It will be seen, in another part of our Journal, that we have given the details in full of a trial which has recently taken place in the county of Lincolnshire, respecting the sale of some sheep affected with scab. The parties to the suit hold a most respectable position, the plaintiff being a very extensive farmer and the defendant a large cattle-dealer. It was not attempted to be denied, on the part of the defendent, that the sheep were diseased at the time of sale; indeed, on this point, the evidence was most conclusive. The plaintiff sought to establish "an *implied* warranty against a contagious disease, in accordance with trade custom," but in this he failed, as he also did in proving that the

defendant sold the animals with a knowledge of their true condition. The result, therefore, establishes that a buyer has no claim against a seller in the case of scab in sheep, unless a general or special warranty be given, as otherwise the rule *caveat emptor* applies.

We have, however, to deal with the question in another of its bearings, and we ask whether parties should be permitted to bring scabby sheep into fairs and markets with impunity, and thus spread the disease far and wide? It will be seen from the following quotations that the law is singularly defective with regard to this point, although very precise on others.

In 1798, an Act was passed, the 38th of George the Third, cap. 65, entitled 'An Act for preventing the Depasturing of Forests, Commons, and Open Fields, with Sheep or Lambs infected with the Scab or Mange, in that part of Great Britain called England.'

The preamble sets forth that—

"Whereas there are within this kingdom several forests, chases, woods, moors, marshes, heaths, commons, waste lands, and open fields, and other undivided and uninclosed lands, capable of yielding great profit, by breeding and maintaining sheep and lambs: and whereas several persons interested in such lands turn out, keep, and depasture thereon sheep and lambs infected with a certain contagious complaint or disorder, commonly called *the Scab* or *Mange*, by which means such complaint or disorder has gradually increased, and will, if such practice be not restrained, become general, to the great injury, not only of divers individuals, but to the public at large, such complaint or disorder rendering the flesh of such sheep and lambs unwholesome, and destroying the wool."

Next follows Clause I, which, after praying, "May it therefore please your Majesty that it may be enacted," sets forth—

"And be it enacted by the King's most excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, that, from and after the Twenty-fifth day of *December*, in the year of our Lord one thousand seven hundred and ninety-eight, if any person or persons whosoever shall turn out, keep, or depasture, in or upon any forest, chase, wood, moor, marsh, heath, common, waste land, open field, or other undivided or uninclosed land, any sheep or lambs infected with such complaint or disorder called *Scab* or *Mange*, or shall wilfully and knowingly turn out, keep, or depasture, in or upon any such forest, chase, wood, moor, marsh, heath, common, waste land, open field, or other undivided or uninclosed land, any sheep or lamb which, at any time within the space of six calendar months immediately previous thereto, shall have been infected as aforesaid, every such person, on being therefore convicted on the oath of one or more credible witness or witnesses,

or on his or her confession, before any one or more Justice or Justices of the Peace for the county, district, or place, wherein such offence shall have been committed, shall forfeit and pay any sum not exceeding ten pounds, nor less than twenty shillings, for every such offence, together with all reasonable costs and charges attending such conviction, such costs and charges to be ascertained by the Justice or Justices before whom such conviction shall take place; and so *toties quoties* as often as any such sheep or lamb shall be so turned out, kept, or depastured.

"II. And be it further enacted, that, from and after the said Twenty-fifth day of *December*, one thousand seven hundred and ninety-eight, the owner or owners of each and every sheep and lamb of the age of three months, which shall be turned out, kept, or depastured on any forest, chase, wood, moor, marsh, heath, common, waste land, open field, or other undivided or uninclosed land, shall cause such sheep and lambs to be marked with the initial letters of his, her, or their Christian name and surname, or Christian names and surnames, or with such marks with which such sheep or lambs have for three preceding years been usually marked, such letters or marks not being less in length than three inches; and in case of neglect thereof, the owner or owners shall, for each and every such sheep and lamb not so marked, forfeit and pay any sum not exceeding two shillings; and so *toties quoties* as often as any such sheep or lamb not so marked shall have been so turned out, kept, or depastured."

Other clauses provide for the recovery of the fines and penalties, but not one word is said about the sending of such sheep to fairs or markets, the selling of them, nor the driving them along roads, &c.

Here then is a great blot in the law, and one which ought at once to be removed. The present session of Parliament should not be allowed to close without a strong effort being made to remedy this defect. The 'Cattle Contagious Diseases Act' comes on for renewal, and, therefore, a most fitting opportunity is offered for that being done which we have suggested. This measure will require a great modification at an early date; indeed, a thorough revision of it is even now needed. We, however, refrain from going into these particulars at this time, contenting ourselves by earnestly recommending agricultural societies and farmers' clubs to forthwith petition the House to amend the law as applicable to the scab in sheep.

THE ASSIMILATION OF NITROGEN BY PLANTS.

It is well known that all vegetables contain nitrogen, but whether this element be obtained entirely from the organic and inorganic azotized compounds contained in, or added to, the soil in which they grow; or whether, on the contrary, it

be derived partly from these sources and partly from the free and gaseous nitrogen existing in the atmosphere, is so important and interesting a question that the solution of it has from time to time engaged the attention of several very eminent and distinguished chemists. At a recent meeting of the Chemical Society, a paper by Mr. J. Lawes, F.R.S., and Dr. Gilbert, F.R.S., was read, in which these gentlemen stated that "the main object of their experiments, which had been carried on for a period of twenty years, was to discover the source of the nitrogen of vegetation, and especially whether free nitrogen could be assimilated by plants."

After referring to the influence of ammonia, nitric acid, and other nitrogen-containing compounds, on certain crops, the authors proceed to remark that "the question as to the power of plants to assimilate free nitrogen had been inquired into by many investigators. Boussingault's experiments on this point had been made under various conditions; and eventually he excluded plants altogether from the external air, all the air supplied to the plants being previously washed with sulphuric acid, carbonic acid being occasionally supplied in addition. He came to the conclusion that plants did not assimilate free nitrogen. The experiments of M. Ville, who employed an iron case with glass windows to contain his plants, led him to an exactly opposite conclusion; there was little doubt, however, that in these experiments the increase of combined nitrogen was due to the impurity of the distilled water supplied to the plants. De Lucca considered that ozonized air might effect the oxidation of free nitrogen, and give rise to the formation of nitric acid.

The question having been left in this conflicting state, the authors, with the assistance of Dr. Pugh, had taken it up. With respect to the action of ozonized air contained in the cells of leaves on nitrogen, it was not probable that ozone would be formed during the evolution of oxygen from a plant placed in the sun's rays, since these rays possessed a great reducing power; still less could ozone be formed when the plant was in the shade, for the oxygen would then be consumed in the oxidation of carbon to form carbonic acid; ozonized air might, however, act on the nitrogen in the air, and give rise to the formation of nitric acid. In order to determine whether plants could assimilate free nitrogen, they em-

ployed an apparatus composed of a large glass shade, resting upon a pan formed of a plate, with two concentric cylinders arising from it; the edge of the glass shade passed between the two cylinders, and the intervening space was filled up with mercury. The soil employed was burnt, exhausted of soluble matter, ignited, and allowed to cool over sulphuric acid; it was then placed in porous pots. The air supplied to the plants was washed with sulphuric acid and carbonate of soda before it was allowed to enter the glass shade. It was forced through the apparatus instead of being drawn through by an aspirator, which was the plan adopted by former experimentors—this method of procedure preventing any errors being produced by leaks. The seeds which were allowed to germinate in this apparatus grew up to a certain extent, and, in fact, showed a curious power of maintaining their existence—new parts, as they grew absorbing nitrogenous matter from old, decaying parts. Leguminous plants, however, died almost as soon as they, had germinated, not being able to sustain their existence without an additional supply of combined nitrogen. In some of the experiments nitrogenous matter was supplied to the plant until it had attained some growth, but in no case did any increase in the amount of the combined nitrogen, beyond that supplied, and that originally existing in the seed, take place; in fact, when additional combined nitrogen had been supplied there was a loss of nitrogen, a portion of it being carried off as ammonia by the current of air passing through the apparatus. With respect to a loss of nitrogen taking place from the production of free nitrogen by the decay of those portions of the plants that were dead, by which an error would be introduced, they considered that, although under certain circumstances such might be the case, as, for instance, by the decay of dead leaves, &c., still under the circumstances of the experiments mentioned no loss of this kind took place."

At the close of the reading of the paper, Dr. Frankland said "he considered that, with respect to the opposite result arrived at by M. Ville, it was partly to be attributed to his apparatus, which was probably not air-tight, while the authors of the present paper had taken care to guard against a similar inaccuracy."

Extracts from British and Foreign Journals.

ON THE SUPPLY OF HORSES ADAPTED TO THE REQUIREMENTS OF THE ENGLISH ARMY; WITH NOTES ON THE REMOUNT SYSTEM IN THE FRENCH ARMY.

By J. Wilkinson, Veterinary Surgeon General.

In the history of the horse, it would be interesting to trace the changes which time, climate, and the control of man have effected in the animal's frame and constitution. To the colossal fossil remains which have been discovered in America, no exact date can be assigned; but they are evidently those of a gigantic race, long since extinct, which differed essentially from that now on the earth. If we would learn what was the prevailing type of the horse of the early Asiatic empires, a wonderfully faithful record has been preserved in the Nineveh marbles; whilst the sculpture and painting of Greece and Rome will enable us to form as true a conception of the then existing type, making due allowance for the exercise of poetical imagination in those works of art. In the ever-varying and ever-beautiful form and character of the figures represented by these artists, a harmony prevails from which we may fairly conclude that the conformation is, as a whole, true to nature.

Some important "points" which we recognise in the Elgin Marbles, and the various antiquities of the Acropolis, have been successfully and rightly reproduced in modern works, such as the beautiful bas-relief of the "Passage of the Red Sea" in the last Great Exhibition, and are still to be traced in one or two extant breeds of north-western Europe; points especially affecting the head, neck, and body, and exhibiting a configuration which we in England by no means seek to imitate.

In respect of numbers, although the horses and chariots of the Egyptian and Asiatic monarchies were numerous, it was reserved for Tamerlane and Bajazet to assemble the most mighty hosts on record, when between them they paraded 700,000 horses! The requirements of modern European armies are dwarfed by such a comparison, and our own numbers are small even when compared with those of some continental nations; but the ordinary demands of our peace establishment of 13,000 or 14,000 horses by no means indi-

cate the amount of strain which would be put on our resources in the event of war.

In ordinary times the proportion drafted from the service is a little under 13 per cent., or about 1500, a number which bears a very small proportion to the whole supply bred for the English market. Of these 13 per cent. a little over 11 per cent. are *cast* and sold, the deaths from accidents and incurable diseases being less than 1 per cent., and those resulting from curable diseases of a like amount.*

For these favorable results we are indebted, in the first instance, to the vigilance and practical skill of His Royal Highness the Field-Marshal Commanding-in-Chief, who expects every branch of the service to be "always ready," and at once detects any defect, whilst he so encourages and supports every zealous officer as to make the performance of duty a real pleasure.

In the second place, these results are due to the exertions of all the officers and men of the various regiments, who constantly vie with one another in the practical application of the best means of keeping horses in health. These means are so correctly appreciated in the army, and are so few and so simple, that they can be easily carried out. Good oats, 10 lbs. per diem; hay, 12 lbs.; straw, 8 lbs.; water, *ad lib.*; exercise; surface drains; clean stables, dry litter floors, and proper ventilation. The system of ventilation is threefold:—1st. Ground ventilation—for drying the floors; 2ndly, ceiling ventilation—for the egress of vitiated air; and lastly, but not least, respiratory ventilation—for the supply of fresh air under the horse's nose; all these ends being accomplished without the creation of strong currents. It will easily be seen that our principles of stable management are founded on common sense.

These results contrast very favorably with the comparative military statistics of our neighbours the French. They muster an effective force of about 41,793 horses of all arms of their service, and the average of deaths is 8½ per cent. (instead of about 1½), namely—5 per cent. from glanders and farcy, and 3½ per cent. from accidents and what we have

* In the chapter of accidents, the following are noteworthy:—A short time ago a man in a leading charging squadron had his lance wrested out of his hand, so that it fell upon its butt, and pointed backwards. A horse in the succeeding squadron caught the point on his breast, and so completely impaled himself on it that it came out close to his tail. Again, the other day two horses, whilst at drill, approaching each other from opposite directions, came into collision, and the combined force was so great as to fracture the skull of one and break the back of the other. The horses could not fail to foresee the shock, and, but for their docility, might have avoided it. And yet we are expected to doubt the power of cavalry to break a square of infantry!

designated curable diseases in contradistinction to those which defy all medical skill.

For many years there has not been any very important change in the characteristics of the horses required for the army on home service. They may be appropriately divided into two chief classes—those of the Cavalry and the Artillery; the first of which may be subdivided into Heavy and Light Cavalry; the second into Horse and Field Artillery; the requirements of the Engineers and Military Train being put under the same head as those of the Field Artillery, although the Engineers use a rather smaller horse, and the Military Train a slightly heavier one, than the Field Artillery. Each corps selects its own horses. The Heavy Cavalry make, in a great degree, successful attempts to procure the breeding and substance of weight-carrying hunters. The Light Cavalry attempt with equal success to obtain well-bred, active, hunting-like horses, of less weight.

Those chosen for the Horse or Flying Artillery approximate more to the London carriage-horse than to any other class; and those which belong to the Field Battery class are of the thick, active, farm or railway-contractor's kind. The officers' chargers, being suitable for the park or hunting-field, and such as they would use whether in the army or not, need not be further noticed.

This classification may be said to have existed for a good many years, but the number in each class has not remained relatively the same; the Royal Artillery having been greatly augmented, in consequence of the increased importance of that arm of the service.

Although in no one instance, perhaps, is a horse bred expressly to supply the army, nevertheless horses of all these four descriptions are reared in abundance in the United Kingdom; and we may feel assured, from our experience of the influence of the short Crimean campaign, that our general capability of rearing horses admits of very great expansion. Under the impulse then given, in Ireland alone the increase in one year, upon a stock of 573,408, amounted to 26,374; as, although the war was then over, the vastness of this increase may be attributed to its influence. It is very much to be regretted that we have no means of knowing how many were bred in Great Britain in the same eventful period; for we may be allowed to think that the diminution in the number of cavalry horses bred in Great Britain, which is a notorious fact, and the increase of the same produce in Ireland, have arisen, in no inconsiderable degree, from the publicity which was given in Ireland, and

there only, to the state of the supply. Twenty-five years ago the case was reversed.

The price paid by Government for the horses of the army, which, on an average, amounts to about £36, may not at first sight seem to be sufficiently remunerative to induce farmers to breed purposely for the army, and such, perhaps, never is their precise purpose. Their aim is to breed a carriage-horse or a hunter; but as their good intentions are not always realised, they sometimes fall back upon the cavalry or horse artillery. In breeding for farm or railway purposes, they at the same time produce horses for the rest of the service; and we think that £36 for a green four-year old of this class would pay the farmer, if he obtained his fair share of the price paid; but we fear that more dealers live between the breeder and the barrack than is compatible with the interest of either party. Therefore the supposed difference between the real value of the horse supplied and the £36 which he costs, affords a base for the arguments in favour of Government breeding establishments, and against the present system of remounting.

This question, which has engaged the attention of military men and others from time to time, has led to the framing of many well-considered schemes; but they have failed to carry with them the conviction that such a course would be better for the Government or the army than to have, as at present, the whole agricultural interest in the United Kingdom as an open market. At the same time we think it not impossible that some plan might be discovered by which the farmer would be better remunerated, and the troops as well, if not better, mounted.

The horse, as well as other animals, has been much improved by judicious crossing; but as every race has a natural tendency to return to its primeval type, constant attention is required on the part of breeders to prevent degeneration. Wonderful improvements in conformation, speed, and strength, have been accomplished in some classes. We may instance as specimens the statue opposite Apsley House (*when seen on the ground*) and that in Pall Mall East. Both these, we have reason to believe, were taken from life. But, alas! the majority of breeders pay very little attention to symmetry and power. Sometimes they do not appear to have any purpose in breeding beyond the getting of a foal of any sort. Some are so prejudiced that they will breed from a mare when old and worn out, simply because she once carried her owner through a very long journey, or performed some other unusual feat; entirely disregarding the fact that

she may have a large head, ewe neck, upright shoulders, calf knees, long, crooked pasterns, long, slack back, weasel waist, short, drooping quarters, short thighs, curby or cow hocks, with dishing, speedy cutting, or slouching action.

The selection of the sire will likewise be mainly determined by the small cost of service or a long pedigree; though to the intrinsic merits of his race he may exhibit no personal claim whatever. A mongrel offspring is the result, and the breeder is led to the exercise of his British prerogative, and grumbles, not at his own mismanagement, but at what he calls capricious Nature, which drops a valuable foal in a neighbour's paddock, on the other side of his boundary fence.

The farmer will not breed expressly for the army, but aim at getting either a weight-carrying hunter or a carriage-horse, with the further chance of receiving from £30 to £36 for his colt at four years old, for military service—no very bad alternative.

When we take into consideration the wonders achieved of late years in our improved races of cattle, sheep, and pigs—their early maturity, their precocity in breeding—it is surprising that the same principles have not been generally applied to the horse, and attended with like results. In breeding for the turf alone has the new system been in any degree adopted. From the high and forcing diet afforded to the young thoroughbred, he has often, to all intents and purposes, as much arrived at maturity at four years old as the colt which has run loose on wild pastures at five. He is thoroughly furnished, and his bones are quite consolidated. In one respect only it would seem that Nature's course cannot be accelerated, viz., the development of the teeth. Whatever be the extent to which the young thoroughbred is forced, the dentition will not be forestalled, but the mouth will give a correct indication of his age. This circumstance promotes trickery among the breeders and dealers, which often produces prejudicial consequences; but from high-feeding, the young colt will now not only have a more fully developed frame, but greater fitness to stand work, than he would generally get credit for if his age were honestly indicated by his teeth. This circumstance may explain, but not excuse, the cruelty to which young horses are so often exposed from extraction of milk teeth and cauterizing the gums and other such expedients to hasten the process of teething. It would seem then, that early maturity is as attainable in the horse as in other animals, and that not in appearance and stature only, but in fitness for bearing the strain of work. The same means will here be required which have been found so profitable in the case of cattle, viz., a generous diet, such as proves remunerative not only in the market but in the manure-heap.

If such a course be adopted, the breeding of horses need no more be restricted to the pastures of Yorkshire and similar districts than the breeding of shorthorns to the birthplace of that tribe; and special advantages from easy and convenient access to good sires may counterbalance the possession of better natural feeding-grounds.—*Journal of the Royal Agricultural Society.*

(*To be continued.*)

THE BATH AND WEST OF ENGLAND SOCIETY.

THE SHOW OF HORSES AT EXETER.

The Bath and West of England Society for the encouragement of agriculture, arts, manufacturers, and commerce, the operations of which, since its revivification some ten years ago, has been the means of doing much good, especially in respect to the agriculture of the western counties; and its annual exhibitions for several years past have been second only, in some respects not even second, to those of the Royal Agricultural Society. The society in its annual reports, and in its journal, has on several occasions drawn attention to the necessity for improving the breed of horses within its district, especially in the western division. With the view of helping in this work, the society has offered handsome prizes for horses, and this year has added a special exhibition for entire horses. The exhibition was holden before the regular meeting of the society, in order to give breeders thus early in the season an opportunity of availing themselves of the best horses. The exhibition took place in the yard of the Cavalry Barracks at Exeter. The prizes offered were large, £50 as a first prize for thoroughbreds, and £30 as a first prize for horses for agricultural purposes. There were twenty-three entries.

The entries for horses for agricultural purposes—stallions not exceeding six years—were made by Mr. Joseph Reynolds, Perranzabuloe, Cornwall, half-bred horse, "Young Oxford;" Mr. Charles Noble, Swansea, Clydesdale horse, "Young Redmount;" Mr. John Shepherd, Stogursey, Somerset, cart-horse, "Prince;" Mr. James Shepherd, do., cart-horse, "Invincible;" Mr. Edward Giles, Helesbury, Wilts, north county horse, "Sampson;" Mr. William King, Tiverton, a roan cart-horse, "Model;" Mr. George Elliott, Swilly, Plymouth, cart-horse, "Black Prince;" Mr. James Horswell, Lew Down, Devon, Clydesdale horse, "Stapleton;" Mr. William Hawke, of the Basset Arms, Budock, near Falmouth, gray horse, "Volunteer," five years and seven months; Mr. James Davis, Clapton, Somerset, brown horse, "Clyde;"

Mr. Wm. Dicker Brock, Crediton, Devon, cart-horse, "Young King of the Valley;" Mr. George Hassell, Barton Hill, Bristol, Clydesdale horse, "Royal Albion;" Mr. Edward Churches, Godney, Wells, Somerset, cart-horse, "Champion;" and Mr. R. H. Watson, Dorsley, Totnes, Clydesdale horse, "Aberdeen;" being fourteen entries in this class. For hacks and hunters—thoroughbred stallions—the entries were Mr. R. H. Watson, Dorsley, Totnes, chesnut horse, "Hungerford," 15 years; Mr. R. H. Watson, do., "Brocket," 13 years; Mr. W. Barrett, Puddevain, Totness, chesnut horse, "Ratan," aged 22 years, bred by Mr. Crockford; R. C. Riddell, Esq., Spreacombe, Barnstaple, "Frederick;" Mr. R. G. Luxton, Brushford, Devon, chesnut horse, "Baldfaced Stag," 8 years and 2 months; Mr. James Perrett, Gillingham, Dorset, "Puzzler;" Mr. James Hollocombe, Reading, Berks, "Young Touchstone;" Mr. J. K. Newman, Bradford Abbas, Sherborne, "Phenomenon, junr.;" and Mr. Thomas Lake, Wear Gifford, Torrington, "Swalcliffe," bred by the late Mr. J. P. Cook.

"Young Touchstone" and "Royal Albion" were not placed, but all the other horses entered were present. Early in the morning they were subjected to a strict examination by the society's veterinary inspector, Professor Brown, late of the Royal Agricultural College, Cirencester, but now of London. At ten o'clock the judges—for thoroughbred hacks or hunters—Mr. Walters, of Salisbury, and Mr. Gibson, land steward to Sir Lawrence Palk; for horses for agricultural purposes—Mr. Badham, of Norfolk, and Mr. Wippell, of Barton; commenced the performance of their duties in the presence of a select number of persons especially interested in the matter, and thus for the first time in the annals of the society was the plan of open judging inaugurated.

The show of thoroughbreds was inferior, and left the judges an easy task in awarding to "Ratan" the first prize of £50. This horse, although now 22 years of age, had all the points of a good thoroughbred, including swiftness and energy, that could not be approached by either of his competitors. His legs, from the knee downwards, are the *beau ideal* of the perfect animal; his beautiful head is finely set on a neck of faultless contour; his oblique shoulders give a good earnest of good action and greater strength, as do his well-formed legs of speed. Everyone who saw him was profuse in his praise, and some of the best authorities in these matters unhesitatingly pronounced him to be the finest thoroughbred ever seen in Devonshire. One curious circumstance in connection with the history of this animal may not be out of place here. About nineteen years ago he was entered for the

Derby—bets went very high on him, and his owner, poor old Crockford, was very sanguine as to his success. But, as is too often the case in the sporting world, the horse was jockeyed, and instead of coming in the winner, he was a very bad second or third. His owner was driven into a state of desperation, and in less than an hour after the announcement of the defeat he died of a broken heart. The jockeys were dismissed from the turf by the rules of the racing club. "Ratan" stands 16 hands 2 inches high, and is a good breeder for hunters and carriage-horses, and is also a weight-carrying hunter. He is as quiet as a lamb, and is driven in single harness without blinkers or bridle.

The second prize was awarded to "Baldfaced Stag," whose shoulders were much admired.

"Puzzler" (20) was disqualified, on account of his pedigree not being complete, and Mr. Newman's black horse (22) and "Swacliffe" (23) were disqualified for unsoundness.

The cart-horses were in every way superior in quality to the others; indeed, they made a very fine show. "Model" and "Stapleton" were the favorites; their well-shaped heads and necks, short ears, full chests, and large shoulders, were the principal features of attraction. The judges had some difficulty in deciding between them, and ultimately, after a very careful examination, they awarded the first prize to "Model," and "Volunteer" being disqualified, the second to "Stapleton." Young "Redmount" was commended.

"Volunteer" (9) was disqualified by Professor Brown, on the ground that he was older by two or three years than he was said to be. Mr. Hawke declared he was prepared to produce a certificate of his age from the breeder, Mr. Parnell, of Altarnun. "Clyde" (10) was also disqualified, for being unsound.

Great interest was manifested in the exhibition by the numerous gentlemen and yeomen of the district. John Widdicombe, Esq., of Ivybridge, did duty as director of the show, and greatly facilitated the business of the day. The exhibition closed precisely at four o'clock, when the treasury receipts showed that about £30 had been taken at the doors for entrance money.

THE ORIGIN AND TRANSFORMATION OF ANIMALS.

(*Continued from vol.* xxxv, *p.* 672).

It is, in fact, a case of the alternation of generations, the precise nature of the process being left for Krohn, Huxley, Leuckhart, and Vogt to elucidate. Before completing this

curious story, let us follow M. Quatrefages, and advert to a similar set of incidents in the domestic manners of the Medusæ, or jelly-fish. "For more than a century," as he tells us, zoologists had admitted among the other great divisions of the subkingdom of the Radiata, the class of Acalepha, or Medusa (sea nettles, jelly-fish), and that of polyps. This distinction seemed more than justified, as differences between the two groups were detected, more profound and more numerous than those which separate the reptiles from the birds. There was, in fact, no resemblance in external aspect or internal organization. The jelly-fish, or Medusæ, for example, are free swimmers, and mostly solitary; while only a few polyps enjoy a crawling motion, nearly all are fixed, and most of them live in colonies. Notwithstanding these and other differences, the two classes approximated as their history became known. "The Medusa lays eggs, well characterised by the existence of three concentric spheres, of which we have already spoken. These eggs transform themselves into larvæ, which at first differ little from those of the Serpula or the Teredo. Their oval and apparently homogeneous bodies are covered with vibratory cilia, and exhibit a small depression in front. They swim for some time with vivacity, like the Infusoria, which they resemble sufficiently to deceive any one whose observations were restricted. This first phase of the life of a Medusa lasts about eight and forty hours. The movements then grow slower, the young larvæ seem fatigued, and by the aid of the little depression attach themselves to some solid body. Henceforth the wanderer vegetates in one spot—a thick mucus which it secretes forms a large disc, that fixes it firmly.* The young Medusa changes its shape as well as its mode of life. It elongates rapidly. Its pedicle grows narrower, and its free extremity swells out in a club form. Soon an opening appears in the middle of this extremity, and an internal cavity is seen. Four little nipples spring from the margin and grow into arms, while others are not slow to appear, and elongate in their turn. The infusory of yesterday is changed into a polyp." In this state it exhibits the properties and ways of the polyp group, multiplying by buds and by *stoles*,† from which new polyps arise. The formation thus produced resembles "horns widely expanded, but short, and having their margins gar-

* In a note M. Quatrefages says that he has reproduced the opinion of Sars, although he thinks it probable that the so-called mucus is a veritable expansion of the sarcode.

† "Stole (*stolo, a shoot*), a lax, trailing branch, given off at the summit of

nished with twenty or thirty slender and movable filaments." M. Quatrefages compares this mode of growth to the proceedings of a strawberry-plant, and thus continues the story: —"The Medusa lives some time under this form, until at last one horn acquires three or four times the length of its companions, and at the same time becomes cylindrical. A circular depression then forms near the crown of tentacles, others follow at regular intervals towards the pedicle, which is never reached. The body thus becomes circled with ten to fourteen rings." After undergoing development, these rings are successively detached, and swim away. They are, in fact, medusoids, and gradually assume the true medusa form. These remarkable steps are again compared by M. Quatrefages to an imaginary case in the insect world. Suppose, for example, "a butterfly laid an egg; that from this egg there came an earthworm, which changed into a caterpillar, from which other caterpillars grew like branches. Suppose, then, that each caterpillar retained its head, but suffered its body to be transformed into a chrysalis; that the body was then constricted at intervals, and that it gradually appeared to be composed of butterflies piled one on the top of another; that the head subsequently fell off, and the butterflies flew away and gradually assumed their full proportions and perfect forms." This certainly would be an incredible narration, but transfer the incidents from the insect world to the jelly-fish, and it is pretty much what actually takes place.

The interpretation of this class of facts renders it necessary to bear in mind the words *larva, chrysalis,* and *perfect insect,* and to remember the conditions which they indicate. Turning to the classes of animals undergoing the peculiar changes which we have traced, M. Quatrefages proposes to adopt the nomenclature of Van Beneden, and to "call *scolex* the animalcule which emerges from the egg of a Medusa, or any other species following the same method of reproduction. Extending the meaning assigned by Sars to the term *strobila*, it will designate every compound being which proceeds from a scolex, and which is destined to produce isolated individuals. Lastly, borrowing from Dujardin an expression which he employs in a similar sense, *proglottis* will designate the individuals springing from a strobila, and which complete themselves by the acquisition of reproductive organs, and thus close the cycle of development." Between the primitive *scolex* and the *strobila* several generations may, as we

the root, and taking root at intervals, whence fresh buds are developed."—Henslow, 'Dictionary of Botanical Terms.' Zoologists borrow this term to describe an analogous process in certain animala.

have seen, be intercalated, and in this case our author calls the first scolex *proto-scolex*, the second *deuto-scolex*, and so on, signifying first, second, &c., by Greek words.

In the Medusa we saw that "each egg which it laid produced not a single Medusa, as a butterfly's egg yields a single butterfly, but a great number of individuals. Secondly, this reproduction took place in an indirect or mediate way; for between two generations of Medusa several generations of very different creatures were produced by budding. To speak in a still more general way, it is a case of *multiple generation* by the aid of a *single germ*. It is that which I have endeavoured to express by the word *geneagenesis*, which is applicable to every method of reproduction that exhibits this characteristic feature." The common polyp multiplies by buds, and also by eggs; but when it lays eggs it dies. Thus from the polyp egg comes a single individual, a *scolex*, capable of producing others like itself, which can bud in their turn, and repeat the process, and which end, like the original stem animal, in acquiring sexual attributes. "It is as if there came from the egg of a butterfly an animal having the appearance of a perfect insect, but destitute of reproductive organs, although able to give rise by budding to individuals like itself, and which, together with itself, would ultimately acquire the attributes of a father and mother." In such instances geneagenesis is reduced to its simplest elements, each scolex transforms itself into a proglottis, and the strobila stage does not appear.

Among the Ascidians, of which the Salpa may be taken as an example, "the scolex transforms itself directly into a proglottis, which in its turn produces a whole generation of individuals like itself. . . . . In this case, to follow out comparison, it is as if the butterfly's egg produced a caterpillar, which arrived at a perfect state, and afterwards, from the butterfly coming from the primitive egg, other butterflies had sprung, of which it was neither the father nor the mother, but only the parent." With the plant-lice we arrive at further complications. "The egg laid in autumn engenders a scolex, having the character of a nymph or pupa. During the spring this nymph does not lay eggs, but forms *buds*, which arise and organize themselves in the *interior* of its body, instead of making their appearance and developing themselves on the outside, as with the polyps and the Medusæ. When the temperature falls, the normal reproductive apparatus shows itself in distinct individuals, and then we find males and females, that is to say, true *proglottis*." M. Quatrefages does not consider that the main facts demand any

other interpretation, in consequence of Heiden's discovery that an Aphis, after producing offspring all through the season *agamically*, or in a spinster state, ends in acquiring sexual characteristics. This he calls the *scolex* becoming a proglottis.*

With reference to the Salpa and its curious "alternation of generation," M. Quatrefages observes—"Thanks to Messrs. Krohn and Huxley, we now know that with the Salpæ there is not only an alternation in form and condition, but also in the method of reproduction. From their united labours, it appears that the *chained* Salpæ are at once males and females, and that they lay eggs from which the *isolated* Salpæ are produced. These last are neuters, and give rise, by internal budding, to chained Salpæ only. . . . Among the Salpæ it is as if the egg of a butterfly produced a caterpillar, from which sprung a chain of butterflies fastened together, and flying without power of separation."

The phenomena of geneagenesis are confined to the lower grades of the animated world; no vertebrate animal exhibits them, and they are rare amongst invertebrates of an elevated organization. Independent of the plant-lice, insects rarely furnish instances of this peculiar mode of multiplication, and M. Quatrefages tells us that among the superior annulated animals, or those possessing articulated feet, it is only found among insects and crustaceans. "Moreover, among these latter we have no other example than that afforded by the Daphina; at least, nothing of the kind has yet been noticed in the myriopods, spiders, and cirrhipedes.†

Among the worms, or inferior annulated animals, it is commonly found, and M. Quatrefages regards *fissiparity*, or multiplication by division, as belonging to this system of reproduction. He observes, with special reference to Nais, Nemertes, and other worms, "During many generations, the individuals produced by this method are neuters, like their parent; at length, under conditions which are not known, the sexes appear, and the species is propagated afresh by means of eggs." He adds that no mollusc, properly so called, adopts this mode of propagation, but that among the *molluscoida* (or mollusc-like creatures) geneagenesis seems to be the rule.

We must refer the reader to the elegantly written work

* Detailed information concerning this subject will be found in Mr. Huxley's paper on the "Organic Reproductions and Morphology of the Aphis," 'Linn. Trans.,' 1858.

† The Scolopendra, or "hundred legs," common in gardens, is a myriopod; the acorn barnacle so frequent on seaside rocks, is a cirrhipede.

upon which this paper is founded for details of the reproductive arrangements of the Radiata and intestinal worms; suffice it to say that, among all the diversities which they present, the author traces the leading facts of his doctrine of geneagenesis, and feels justified in arriving at the conclusion that gemmiparous or budding reproduction is not able to perpetuate the species, but that after a given time the formation of true eggs becomes necessary. He rejects the parthenogenesis, or virgin-generation doctrine of Mr. Owen, and sees in all the cases to which such an explanation has been applied illustrations of the methods we have explained. With the views of Dr. Carpenter he concurs, regarding oviparity or egg generation as entirely distinct from gemmiparity or bud generation; the first demands the concurrence of two systems of organs, special and distinct; the second, as Dr. Carpenter expresses it, is a multiplication of cells by a process of continual growth. All reproduction that does not involve the formation of true eggs he regards as phenomena of budding, which, in their turn, are phenomena of growth, and as the manifestations of growth are limited, the budding process has its duration limited also, and can never perpetuate a race.

M. Quatrefages is, of course, aware of the difficulty of proving the intervention of a *father* in all cases of continuous reproduction in the insect world. As we have seen, the necessity for such an individual may be postponed for many generations, and some naturalists have thought it might be permanently dispensed with. It may be asked, is the father a constant item in the natural arrangements for the preservation of species? Bernouilli, Treviranus, Suckow, and Burmeister had observed among several nocturnal moths, and Malpighi, Herold, Curtis, and Filippi had noticed among the silkworm moths, that females, without any connection with the males of their species, could lay fertile eggs, and M. Carlier has obtained three virgin generations of the *Liparis dispar*

These observations seemed little favorable to the pretensions of the male sex, but subsequent discoveries reasserted its importance. M. Zierzon, curé of Carlsmark, in Silesia, a man whom M. Quatrefages describes as endowed with a rare faculty of observation, declared that while the queen bee preserved her virginity intact, she could only lay eggs that produced *males*. He admitted with Huber that the queen could receive on a single occasion enough of the fertilising fluid to last for several years, but he contended that she could decide whether the egg which she laid should be acted upon by it or not. In the first case he said a female bee was the

result, and in the latter a male. It appears that with bees the union of the two sexes can only occur during flight, so that cutting off the wings of a female bee, or a natural defect having the same result, will preclude her laying fecundated eggs. It also appears that if a married queen is exposed to a degree of cold capable of injuring the fecundating fluid, or if the communication is stopped between the vessel in which she retains it and the canal through which the eggs are deposited, she only produces males *after* such an accident, although she had previously been producing bees of her own sex. In Germany, where bee culture occupies much attention, it seems that efforts to produce crosses between two races confirmed Zierzon's ideas. Thus, when local bees were crossed with the Ligurian bee, the offspring resembled both parents so far as workers and queens were concerned, but the male progeny reproduced the maternal type in all its purity. Siebold and Leuckart undertook a scientific examination of the facts thus disclosed by Zierzon and Berlepsch, and the result of *post-mortem* examinations of married and unmarried queens, and of the eggs which they produced, showed that the curé of Carlsmark was right.

At this point of the argument the question arises whether the unimpregnated eggs are true eggs at all. To answer this M. Quatrefages has recourse to the labours of Mr. Huxley in reference to the reproduction of the aphides, and he observes, "in the three last chambers of the ovary of the *oviparous* aphis, figured by Huxley, we see the egg in its nascent conditions, represented only by an isolated vesicle of Purkinje, very small, but well characterised and already possessing the spot of Wagner. This vesicle grows in passing through the second chamber, but it is only in the third that it begins to surround itself with a vitellus, all the while leaving the germinating spot distinct and noticeable . . . . with the *viviparous* aphis, Huxley describes and figures these phenomena very differently. Here the last chamber of the ovary is filled with a pale, homogeneous matter, in which are a dozen cells with opaque nuclei.* A portion of this matter is separated from the rest by a constriction of the walls of the chamber, which becomes more and more pronounced. . . . . Nothing here resembles the true 'vesicle of Purkinje,' or the true 'spot of Wagner,'—the fundamental elements of eggs properly so-called." Acting upon this view, M. Quatrefages considers the unfecundated eggs to be another form of *bud*, and he asks, "is their nature changed because, being

* "Dans laquelle sont comme noyées une douzaine de cellules à noyau opaque."

destined for development outside the maternal bosom, they have received an envelope of greater or less solidity, according to the protection against accidents which they are likely to require in the external world? . . . . . But if these reproductive bodies are *buds*, not *eggs*, it follows that development without male intervention belongs to the phenomena which we have been studying, and that we have thus not *parthenogenesis*, but *geneagenesis*."

Regarding no object as a veritable egg which does not possess the Purkinje vesicle and the Wagner spot, M. Quatrefages considers that cases of parthenogenesis will be greatly diminished, but he is convinced they will not be entirely obliterated from the book of science. He admits, without, as he says, going as far as Huxley, Owen, and Lubbock, that there exist "intermediaries" between eggs and buds, but, after all reservations, "parthenogenesis is not, in his eyes, a constant fact." He admits that there exist "true females, laying veritable eggs, which develop themselves without male intervention in any way whatever;" but he thinks these phenomena are supposed to be much more frequent than is really the case, and that reproduction by females only tends to exhaust itself, and that "always, the intervention of the male, recurring at a given moment, as a necessary element in the perpetuity of species, is evidently one of the great laws of nature." The father is thus "as necessary as the mother for the indefinite duration of species, and the point of departure for a cycle of generations is not only an egg, but a fertilised egg." *Pathenogenesis* is, then, "only a particular case of *geneagenesis*."

We cannot now follow M. Quatrefages through the vegetable kingdom in which he pursues his theme, but we may observe that philosophers, who require every step in an inductive process of reasoning to be strictly proved, will hesitate before they affirm with him that "a father and a mother—that, is a male and a female—such is the origin of *every* living being." They will likewise prefer a frank confession of ignorance as to how and why the characteristics of individuals descend to their posterity, to the assertion that "an *essence* proper to the character of each being" is received from its ancestors and transmitted to its posterity. All, however, will allow that M. Quatrefages has produced an admirably written and learned work, which supplies the profoundest naturalist with deep matter for investigation and thought, while, from the elegance of the language and the clearance of the style, it is admirably adapted for popular use.

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Clinique Vétérinaire, January, 1863.

ORIGIN OF COW-POX.

(*Continued from p.* 181.)

M. Bousquet.—The details of the experiments which are embodied in the report on the practice of vaccination in France for the year 1858, you have already too much in your memory to render it necessary to repeat them here. You all know that neither of us obtained anything but negative results; and, as Pascal remarks, one is more persuaded by what one sees than by what is reported, and it is always a little difficult to renounce one's own evidence to take up that of another. But in this instance the leanings of the experimentors were to some extent negatived by the uncertainty of the nature of the malady. Entirely taken up in the research of grease, they were exact in their diagnosis the more they deviated from that position. It would have been better had they taken up the investigation at haphazard, as they would have had greater chance of arriving at correct data; and it is perhaps to chance that the honour of the successful, though rare, results of different kinds of inoculation which history records, are due. It is thus generally agreed that if the vaccine virus had its origin in the horse, it was from the disease called grease, by which the legs are sometimes affected. Such was undoubtedly the opinion of the medical faculty of Toulouse. This, too, must have been the opinion of M. Leblanc, whose zeal took him to the locality of the epizootic. Unfortunately he arrived a little too late, for nearly all was over before he got there, and what he saw of the malady could only enable him to appreciate its nature; but he saw enough to declare it was not the grease. Its progress had been too regular and too rapid, and, above all, the cure too easy. Hardly, as he said, did it reach the second week, which is not the case with grease. On the other hand, referring to its *début*, he found that it commenced with a fever in the same manner as acute affections in general, and that this fever had nothing of the nature of reactive fevers, for it decreased sensibly at the first appearance of the eruption. Further, the disease was not confined to the legs, but spread, though gradually, to other parts of the body. By these signs, M.

Leblanc declared that the epizootie of Riennes had nothing in common with grease, or any other ordinary malady. M. Lafosse coneurred in these views of M. Leblanc, the more readily as he already entertained similar ones before he had had any communieation with that gentleman. One ean easily conceive how he was fortified by that great authority. To better distinguish the differenee of the two diseases, M. Lafosse gives the following synoptic view, which we transcribe, somewhat reducing it:

Grease.	Vaccinogene Eruption.
Erysipelatous œdema of the lower parts of the legs, bristling of the hair, fetid diseharge, reaetive fever exceptional.	*Début*, pimples, flattened, covered with bristling hairs, principally affeeting the lower parts of the legs.
Loss of hair, eraeks, diseharge of fetid pus, frequently aeeumulated in small eysts under the epidermis; fever eases.	Pustules depressed, seereting a sanguineous fluid, which soon beeomes purulent; the hair eomes off; the fever disappears.
Formation of eellulo-fibrous vegetations in groups (*grapes*). The purulent seeretion eontinues; the tumefaetion inereases.	Dessieation and desquamation.
Often beeomes ehronie; not eontagious.	The pustules beeoming dry, the seales fall off, leaving the parts bare, and showing deep eieatriees, which are sometimes permanent. Always aeute and eontagious.

It is evident from this comparison that the malady which was reproduced in the cow from the horse was an eruption, or rather an eruptive fever. This eruption belongs to the class of pustular diseases like smallpox, with which it has a great analogy; for instance, acute fever, pimples round, flat, and depressed in the centre, with a tendency to suppuration; duration from two to three weeks. If one of these pimples be punctured, the fluid does not run out freely, or at once, but slowly, as is the case with variolous and vaeeine pustules, whieh are divided in the interior into several small eells.

The question is, where did the epizootic of Riennes come from? We have stated that, at the same time, a variolous epidemic prevailed in the environs. Was this a simple eoincidenee, the same influences causing the outbreak of the two maladies? or did the eruption arise, one from the other, by contagion? Another consideration militates against the identity of the two eruptions. It is well known that the principal advantage of inoculation is to lessen the number of the pustules, and this is what constitutes its benignity. With it there is hardly any confluent variola; frequently the pustules only appear at the punctures where the inoculation had been made, and then they are so much like those of vaccination, that Jenner defied the most skilful inoculators

of his time to distinguish the one from the other. But this is not the rule; in the ordinary way there are two successive eruptions, one local and one general, spread thinly over the whole surface of the body. If, therefore, the mare of M. Corail had received the disease by contagion from the human subject, she, it is supposed, would have communicated it in the same manner, that is, the two eruptions which are inherent to it would have followed. It is to be regretted that M. Sarrans did not try the inoculation of this variolous disease from one horse to another. We have tried the transmission of variola from one species of animal to another more than once, but without success. Yet others boast of having been more successful. Among them are Thiele, De Cazan, and Robert Ceely. To this we have nothing to say, only the fact would be invested with greater authority if it had been thus confirmed. When M. Cayril composed his part of the report, which is added to that of M. Lafosse, he had already vaccinated more than 200 children with this new virus, and he had never seen more than one eruption, viz., the local; at least he does not mention any secondary or general eruption; and those who know him, know also that his silence is equivalent to a declaration. The fact of Toulouse is therefore isolated, and is an event in science which might be the inauguration of a new era in the history of vaccination.

On meeting with the vaccine in the cow, which happens sometimes, there is nearly always something wanting. Seldom does the observer see the first period of the eruption; still more rarely is there a skilful hand to collect the virus on the udder of the animal. Jenner himself at first took it from the hands of those who had been accidentally inoculated, and we have not been better favoured in 1836. It has not been our lot to see the vaccine on the udder of the cow; we have only seen the remnants of it; but who would dare, notwithstanding, to doubt the reality of the discovery?

The facts, however, mutilated as they are, have nevertheless, according to our opinion, their full value and importance, the same as if they were the most complete.

It is not always necessary to see the various stages of the affection. as the mind can easily supply that sense. But here there is nothing wanting. The malady of the horse was seen by those who were best qualified to appreciate it; it was not communicated accidentally or by chance; art took it at its source and inoculated it, and so through all its intermediate stages nothing more is wanted to give it its true designation. Nevertheless, the novelty of the malady has rendered us sus-

pected. We have not, however, accepted it without distrust, and if we dare confess it, begging the discoverer's pardon, we have made the researches, one by one, of the causes of illusion which we were enabled to imagine. We have asked ourselves these questions, *firstly,* if by chance the lancet which was used for the inoculation might not have been used for some previous vaccination? This was hardly possible in a school of comparative medicine; nevertheless, we wrote to M. Lafosse, who answered that the lancets of the school were never used for any such purpose. But, to speak the truth, we needed not this assurance, for we had vaccinated twelve cows or heifers and produced the cowpox in all. It is useless to recal here the object of these experiments; it suffices to state that the cows reproduced the pox the same as they had received it, neither more nor less active; instead of which the virus taken from the pastern of the mare by M. Corail produced pustules much larger and better developed, and superior to those of the ordinary vaccine.

2ndly. Could it be supposed that the cow inoculated was on the eve of contracting the cowpox spontaneously? This has been suggested, or else we should not have imagined it. Again, is the cowpox all at once become so common that it may be reasonably expected at any time? It must be borne in mind that the pustules corresponded exactly with the punctures, and that in all their evolutions they have preserved their degrees of development, corresponding with the date of the inoculation. Does all this order and regularity agree with a spontaneous outbreak of the cowpox in the animal? These two objections disposed of, there remains a third, and this is, perhaps, the most important one, although not a new one. From the days of the cowpox, 1799, Curmer contended against Jenner that the cowpox was nothing more nor less than the smallpox itself, transmitted fortuitously to the cow by the hands of the persons who milked them. Might not the epizootic of Riennes also have been smallpox? Here a previous question is presented to our mind, viz., are horses liable to contract smallpox? The most learned professors of the veterinary art do not mention it; nevertheless, we remember that M. Lafosse conceived the idea and tried the experiment. When the smallpox had invaded the Veterinary School of Toulouse, he profited by this opportunity to inoculate some horses, but without any result. But if the epizootic of Riennes, if the cowpox, if the vaccine, are not identically the same thing as the smallpox, they have, nevertheless, the greatest analogies to it, and these analogies explain all the mystery. Is it to be wondered at that analogies

have their validity, which equivalents help to make up? At all events, it seems impossible that a malady which has produced the cowpox should not contain the principle or the germ of it. But our idea of it does not go beyond the fact that the cowpox arose from the inoculation, as we have said. We are careful not to infer that the cow always receives it from the horse. We believe, on the contrary, that it arises spontaneously in the cow, as in its natural source. There are now too many examples of the cowpox in cows who have never been brought in contact either directly or indirectly with horses, for us to renounce this in favour of a rival theory.

Finally, the horse and cow may both have the faculty of engendering the cowpox. This to us appears likely, and the lesson which this observation has given us tends to this, only the cow has the advantage of the greater notoriety. This makes us regret that M. Sarrans, who was on the spot of the epizootie, and M. Lafosse, though he was not on the spot, did not benefit by all the advantages of this fortunate opportunity to multiply the inoculations. Nothing throws more light on an extraordinary fact than the repetition of the same fact.

No doubt all the negative facts in the world are powerless when compared with one positive fact; one which has been well examined and well authenticated. But when an event is rare and contradictory, one has always to fear that the senses might have been taken off their guard: the mind consequently demands new facts to confirm them.

To convince the eye as well as the mind, M. Lafosse has not contented himself by describing the pustules obtained by the equine inoculation, but he has caused them to be represented by drawings from the horse as well as the cow, by which means they may be seen in their various stages of development, from their first appearance to their desiccation. Such, gentlemen, is the memoir of the commission of Toulouse. If we have not been so explicit as could be wished, we know that nothing has been omitted to throw light on a fact which, though still contested, claims to be allowed to take its place in science.

We have the honour, gentlemen, to propose that an Academic letter be written and sent to MM. Cayrel and Lafosse as a testimonial of our satisfaction for their able explanation.

M. H. Bouley.—One fact has struck me in this memoir from Toulouse, and in the report of M. Bousquet, viz., the nature of the malady derived from the horse and the cow, that this malady is not the same as that to which the origin of cowpox has hitherto been attributed.

This is an eruptive malady. The old ideas are that the vaccine has been engendered by the grease of the horse, but it is not grease which has recently been also observed and described by those gentlemen of Toulouse. The result would be that, from the observations made at Toulouse, contagion is less frequently produced by direct inoculation than from the hands and arms of the men coming in contact with horses' legs affected with grease and afterwards with the teats of cows. It is well known that the malady is called grease by the English, and that the description of it by Percival is identical with that which, in France, is described as *eau au jambes*. In Italy, in 1811, Sacco took for grease a furunculous affection which is called *javart* in France and *giovardo* in Italy; but, what is singular, Sacco reports cases of transmission of *javart* from the horse to the cow. In 1840, M. Verheyen published in the 'Memoirs of the Belgian Academy,' a paper on the primitive vaccine, in which he cites facts observed by M. Hertwig relative to cowpox being produced by a gangrenous affection which certainly was not grease. Thus, then, as stated by M. Bousquet, the horse would be vaccino-genetic.

Respecting this there is no doubt; but is there one or several maladies which produce cowpox, or is it incumbent to institute fresh experiments to ascertain whether there is e, and which that is?

M. Depaul.—I am astonished that M. Bouley, instead of criticising and judging the observations produced, should have contented himself by repeating them; he does not even seem embarrassed by what appears contradictory or singular in them. For my part, I confess that the idea of the cowpox proceeding from different maladies deranges all my knowledge of general pathology. Gentlemen, I was a member of this commission of Toulouse. The question was this: does the grease in the horse produce the cowpox? On the 29th of March, 1860, the *Union Médicale* published a letter of M. Fontan, in which it was stated that at Riennes, M. Sarrans, veterinary surgeon, had above one hundred horses affected with grease,* and

* "I determined," says M. Leblanc, "to make the journey to Toulouse on the 6th of June, 1861, because I read in the letter of M. Fontan (published in the *Union Médicale*) that the grease in the horse's legs had produced the vaccine in the cow—a circumstance which seemed extremely strange. I could not accord with the observations made in my presence by M. Bousquet, without having seen the disease by my own eyes. This, I repeat, was the sole cause of my journey. I departed with the conviction that I was going to see a number of horses which MM. Lafosse and Sarrans believed to be affected with grease. M. Fontan would not have guessed at the existence of this disease had it not been so designated by that name to him by M. Lafosse. In a letter written to M. Renault by M. Lafosse, the question is t ill one of grease."—This letter was read on the 26th of June, at the Academy. —U. L.

that one had been sent to M. Lafosse at Toulouse. On the 28th of June, in a letter addressed to M. Renault and read before this Academy, it was stated that two heifers had been inoculated by the matter of grease, and that genuine pustules of cowpox had been the result. M. Leblanc at once departed for Toulouse to inquire into the fact, and he has declared here that the affection which was observed in the horses of Toulouse was not grease.

In the report of Bousquet, we have to deal with two memoirs; one of M. Cayrel, which I lay on one side, and one of M. Lafosse, the only one which is of interest to us, for we want to know but one thing, and that is the origin of cowpox. I regret that no more experiments have been made than were instituted; there were more than one hundred sick horses, and there were only one or two heifers inoculated, and one only of the sick horses was selected. Moreover the malady by which these horses were affected has not been rigorously described; at that time there was an epidemic in the district, viz., the smallpox. I believe, for my part, that the horses as well as the heifers which were affected have simply been subjected to the influence of the epidemic. Cowpox is only a mitigated smallpox.

M. Bousquet.—That is also my opinion. *M. Depaul.*—Ah! so much the better. I am now reassured; I was afraid M. Bousquet was of a contrary opinion to this.

M. Renault.—Being a member of the commission, and accepting the general ideas expressed in the report of M. Bousquet, I would not have spoken, if it had not appeared to me that, in combating what may be called the enthusiasm of the reporter, his colleagues, whom you have heard, had fallen into the contrary excess relative to the fact at Toulouse. If it is necessary not to exaggerate it, it is also necessary not to lessen it. In my opinion, it has a real value, and I will tell you why. No doubt the fact is not so interesting as it might have been, if instead of inoculating one heifer with the matter taken from the mare of M. Corail, M. Lafosse or M. Sarrans had had the idea to take the matter from some of the other horses affected with the same malady as the mare, and had inoculated it with the same success. No doubt, also, that direct and effective inoculation from the mare to children is wanting to make the experiment complete; but as it is, it appears to me to be established as a certainty, and that is very important, that a malady of the equine species, transmitted to the cow by inoculation, produces in the latter a perfect and well characterised cowpox.

(*To be continued.*)

Veterinary Jurisprudence.

MIDLAND CIRCUIT.—NOTTINGHAM, March 11th.

CHAPMAN *v.* MALTBY.

"WINDSUCKING."

This was a somewhat curious horse cause. The first count of the declaration was for deceitfully and fraudulently representing that a certain mare had no disease which could not be discovered on inspection by a veterinary surgeon. The second count was for breach of warranty to the same effect.

Mr. Serjeant O'Brien and Mr. Manley Smith were for the plaintiff; Mr. Serjeant Hayes, Mr. Merewether, and Mr. Yeatman for the defendant.

The plaintiff is a well-known horse-dealer of Cheltenham, and the defendant a farmer and miller, living at Flintham. The account given by the plaintiff and his witnesses was, that the plaintiff and an agent went to the house of the defendant in April of last year, and visited the mare in her stable. The mare's head was then tied close to the rack, the reason, according to the plaintiff, being that it should not be discovered that she was a crib-biter; while the reason alleged by the defendant was that she was unquiet, and would bite and kick. The plaintiff and his man tried the mare, and a conversation then ensued between the parties, in the course of which it was stated that the defendant would not warrant the animal. The plaintiff asked what was the reason, and whether there was any defect in the mare which a veterinary surgeon would not pass? The answer was that the mare was quite right, but that she was fired in the hocks and was ill-tempered. A negotiation then took place, the result of which was that the mare was bought for £150, less £2 10*s.* for expenses of examination by a veterinary surgeon. Mr. Hardy, of Grantham, a veterinary surgeon, examined the mare and passed her, and she was sent to the plaintiff's stables, where it was discovered that she was a very bad "wind-sucker." Another negotiation followed, in which the plaintiff alleged that the mare was unsound, and requested the defendant to take her back, and the defendant alleged that he had never warranted her to be sound. The mare was then offered for sale by auction at Cheltenham, and bought in by the plaintiff for fifty-one guineas, and was afterwards sold as a "wind-sucker" to the Duke of Beaufort for £120. This action was then brought to recover the difference between the buying and selling prices, together with the expenses and other damage attending the resale.

There was not so much hard swearing as is usual in such cases. It was admitted by the defendant that the mare was a "wind-sucker," and that the veterinary surgeon who had examined her had pronounced her to be sound, and by the plaintiff that no warranty of soundness had been given. The only points in dispute were whether the plaintiff had introduced the subject of wind-sucking at the time of the purchase, and whether the examination of the veterinary surgeon was to be the final close of the bargain or not, both which points were affirmed by the plaintiff, and denied by the defendant.

The jury returned a verdict for the defendant.—*Times.*

SPILSBY COUNTY COURT, February 6th.

Before J. G. Teed, Esq., Q.C., Judge.

KING, R. G., *v.* SMITH, B.

SCAB IN SHEEP.

Claim of £50, for loss sustained by the plaintiff, a respectable farmer of North Ormsby, by the purchase of 204 sheep of the defendant, at Partney, last September fair, which, prior to and at the time of sale, were suffering from a disease commonly called scab.

The defendant is a well-known cattle-dealer and farmer at Frieston, near Boston. The plaintiff had laid his loss at £80, but had reduced the sum to £50 in order to bring it within the jurisdiction of the court.

The case, which had been adjourned from the January court, had evidently excited, both among farmers and dealers, the most intense interest, and was felt by both classes to be of the highest importance as a rule for their future proceedings. It lasted from ten o'clock in the morning until after five in the afternoon, and during the whole time the large sessions-hall was completely filled.

Mr. Allison again appeared for the plaintiff, and Mr. Toynbee for the defendant. The following gentlemen were sworn as a jury to try the case:—Messrs. T. C. Maidens, W. Sharpe, F. Riggall, M. Heanley, J. Bond, J. Swain, W. Morton, jun., C. Brooks, G. Cartwright, J. B. Fowler, H. Searby, and C. Mayfield.

Mr. Allison, in opening the case, stated in a long and eloquent address the circumstances under which the action had been brought, and which he intended to prove by a large number of most respectable witnesses. There were three grounds on which he mainly relied for the verdict of the jury in his favour. *First,* that the defendant knew at the time of sale the sheep were infected with a contagious disease; *secondly*, that prior to and at the sale they were suffering from that disease; and, *thirdly*, that for sheep sold at Partney and other fairs in North Lincolnshire there is, by the custom of the country, an implied warranty that they are free from contagious diseases. He called the plaintiff, who stated that he was a farmer at Ormsby; he also occupied a farm in the Middle Marsh, and another at Stewton, in all about 1000 acres. He was at Partney September fair last year, and bought thirty-three sheep of Mr. Morley, and afterwards bought 204 in four lots, of the defendant, at 40*s.* each. At the time of the bargain the four lots were separated, but afterwards the dividing trays were, by the defendant's orders, taken up and the sheep all ran together. They were taken to Brinkhill that night, and on the next day on to his farm at Stewton. He wanted some of them for breeding and some for feeding purposes. The fair was on Thursday. On Friday he went over to Stewton to tell his shepherd what to do with them, and in consequence of what he heard he went again on Monday, and took his Ormsby shepherd with him, when the sheep were examined, and some were found to be suffering from scab in an advanced state. The disease spread, and in all sixty-two became infected. In consequence of the disease he had not been able to use them for breeding purposes, as he had intended.

In cross-examination by Mr. Toynbee.—He said he did not begin dressing them for a fortnight after he knew they were diseased. He had known cases in which persons buying sheep and afterwards finding them scabbed, had returned them. It was a rare thing to find scabbed sheep in a fair. This was the only case he knew of.

James Morley, jobber, was at Partney fair, and sold Mr. King thirty-three sheep; they were part of the flock of Mr. Preston, of Dalby; none of them were scabbed. Had never said it was the habit of the defendant to sell scabbed sheep.

By Mr. Toynbee.—Perhaps I sell at Partney 2000 in the course of a year. I never knew sheep bought in the fair to be returned. It is not common to have scabbed sheep in this neighbourhood.

William Everett had been a drover for twenty years, and took these sheep from Partney to Stewton. When on the road he observed some of them turn and "nag" themselves. The wool was in a rough state. He caught one, and found on it a few "worms;" it had been dressed on the middle of the back. The "worms" were situated just above the tail.

By Mr. Toynbee.—The sheep he caught had been dressed with something dark; it might have been sheep salve.

George Crow, shepherd to Mr. King, at Stewton, helped to examine the sheep when Mr. King came on the Monday. There were scabs on the backs and shoulders of three or four of them. The scabs had risen half an inch in the wool. He had salved them twice; they were not cured yet; in all sixty-two had the scab. They were all marked with the letter C.

Joseph Kitchen, Mr. King's Orsmby shepherd, corroborated this evidence.

Mr. Frederick Sooby occupies a large Wold farm, near Louth, and has some acquaintance with the scab. Went with Mr. King to examine his sheep, and found several with the scab, which they must have had some time when he saw them. He once sold a lot of sheep to Mr. Mawer, at Partney, which were afterwards discovered to be scabbed, and he directed Mr. Mawer to return them, and he gave him back the money. He feared that if he allowed them to be sold by Mr. Mawer he should have many actions brought against him.

Mr. Thomas Mason, auctioneer, Louth, said, in reference to the custom at fairs, it was his impression that in a public fair a sound price implied a sound animal, and that in this case it was not unreasonable to ask for £50 as compensation for the loss sustained.

John Foster.—I have been a farmer several years, and keep about 700 sheep. I always understand that I am buying sound sheep in a market or fair. I never look for disease, because I expect I am buying sound sheep.

Thomas Horton.—I have bought sheep for twenty years. I never examine sheep when buying in a market to see if they have scab. If they looked bad I should examine them. It is not the custom to ask questions as to scab. Giddy sheep or those affected with water on the brain are returnable. It is not customary to examine sheep minutely in a fair, because it is not expected that they are scabbed.

By Mr. Toynbee.—Mr. Byron never asked me about having scabbed sheep. If I bought such sheep I should keep them for the day at least, and sell them if I could. If I sold sheep in a fair which I knew to be affected I should have the fear of the County Court before my eyes. I think the custom is if sheep are sold in a fair as sound, which afterwards turn out to have been affected with scab, the person selling them is liable to take them back. I have never known that custom acted upon.

Mr. Toynbee objected to any evidence as to custom: it would, he said, be contrary to the common law.

Mr. Allison.—I rely upon the dictum of Justice Heath, and that when we go into our fairs we have sound stock.

His Honour.—What I want to make out is that the sheep were set down as sound: the point really is scab or no scab.

Samuel Hobson.—I have been a Wold farmer for forty years. I have

never asked the question, and have never been asked in any fair, whether the sheep were scabbed. I take it for granted that they are sound, because they are there, and that they are offered as sound stock.

His Honour.—What I want to have established is that sheep shall be sound when offered in a fair.

Mr. Allison.—What I mean is that when sheep are offered in a fair there is an implied warranty.

Thomas Stones was at Partney fair and bought some sheep of Mr. Smith. A few days after saw one rubbing herself. I caught her and found she had the scab. She infected the flock. I told Mr. Smith of it at Horncastle fair. He said it was a bad job: he had turned out eighty that day, which had never been offered for sale. He said he had received a letter from Mr. King saying his sheep were also scabbed.

By Mr. Toynbee.—Mr. Smith said he had sent them out of the fair.

John Fisher.—I am a farmer at Sutton-on-Trent. My impression is that when I am buying sheep at a fair I am buying sound animals. At the last Partney fair I bought eighty of the defendant, and in about a fortnight after I found they were scabbed. This is the first time I have been so taken in.

By Mr. Toynbee.—I had the sheep ten days before I found that any of them were scabbed. I never took any steps to find out where Mr. Smith lived. I thought it better to cure them if I could, and make the best of a bad bargain.

William Hornby.—I am a farmer, residing at Sutton-on-Trent. I was at Partney fair. I consider there is no custom but a mutual understanding between buyer and seller that the stock is sound. I never ask if sheep are scabbed. My sheep have the scab, and I have no doubt it came from Mr. Smith's sheep. It was about ten days after Partney fair when I discovered it. The disease was then about two months old. There is no mistake about it.

Henry George Graves.—I breed largely, and attend the Lincoln and Caistor fairs. I always expect when an animal is sold in the market it is a good and sound animal. I have sometimes sold a giddy sheep, not knowing it to be so, and on its being discovered have either taken it back or given the difference in value.

Mr. Thomas Brooks, of Croxby, and *Mr. John Iles*, of Binbrook, gave similar evidence.

Mr. William Allat, of Glinton, Northamptonshire.—I buy and sell sheep. When sheep are offered we understand they are sound. I once bought some scabbed sheep, and returned them. I bought them of a jobber, and on finding they were scabbed threatened him with an action, and he took the sheep back and returned the money.

Mr. D. Gresswell, veterinary surgeon, Louth, proved that the sheep had the scab at the present time. From what had been stated respecting these sheep was certain that they did not become infected after Partney fair. They could not have been infected for less than five weeks at that time. The scab would be visible in about ten days after exposure to the contagion.

James B. Simonds, Professor at the Royal Veterinary College, London, minutely described the disease from the first existence of the *acarus*—scab insect—upon the skin until the malady became fully developed. He also exhibited several specimens of the insect, and some highly magnified drawings of it. In the sheep in question he had no doubt that the disease would have been visible before Partney fair.

Richard Bradshaw.—I am a farmer and a valuer. If I sell sheep in a fair or market I should expect to sell them as sound, and if I wanted to

buy I should not think of asking, are these sheep scabbed? I have had scabbed sheep, but neither bought nor bred them. I was left in trust by a neighbour, and his sheep were scabbed.

This being the case for the plaintiff, *Mr. Toynbee* submitted that on the third point raised by Mr. Allison, the custom of an implied warranty, there was no case to go to the jury.

His Honour thought there was some evidence of that, and he would leave the question to the jury.

Mr. Toynbee then addressed the jury for the defence, contending that there was not the slightest proof that his client knew the sheep to be infected, that reasonable caution had not been exercised by the plaintiff in purchasing the sheep, and that no custom, such as that relied upon by the plaintiff, had been established. Mr. Mason had indeed told them that a sound price implied a sound animal, but for that maxim there was not the slightest foundation in law. The principle of law was *caveat emptor* —let the buyer beware. It would be uncandid, after the evidence of Mr. Gresswell and Professor Simonds, to deny that the sheep were diseased, but he did assert that his client did not know it, and as to the custom of which so much had been said, he would prove by numerous and respectable witnesses that no such custom existed, and having done this he would confidently leave the case in their hands. He then called

Mr. George Houlden, who said, before Partney fair I sold Mr. Smith some sheep: they were free from scab. I was at the fair and saw Mr. King in the pens. I went to him and found there the sheep Smith had bought of me. Mr. King was anxious to know what he had given me for them.

Mr. Bland, veterinary surgeon, of Boston.—I have been to Digby, to Mr. Cooke's farm, to examine his flock. They are all free from scab. It is since the last Spilsby court that I have been.

Mr. William Armstrong.—I bought some sheep of Mr. Cooke, and sold them again to the defendant on the 10th or 11th of September. There was no scab among them.

Mr. John Bramley.—In September last I sold 200 sheep to Mr. Smith. My sheep never had the scab.

Mr. Thomas B. Dring.—I was with Mr. King just before and after he bought these sheep. I saw nothing in their appearance to lead me to believe there was anything wrong. I have bought and sold sheep at Partney fair for forty years. Never before heard of the custom spoken of to-day. My own feeling is, "take care, buyer; take care, seller."

By Mr. Allison.—It is not usual to ask whether the sheep are sound or not.

Mr. Thomas Plowright.—I live at Pinchbeck. Last year I clipped 2700 fleeces. I have been to Lincoln, Caistor, Boston, and the other sheep marts in this county, and I never before to-day heard of the custom which has been spoken of. I have grazed thousands of sheep in my time. I have bought sheep affected with scab, not knowing it to be the case, but I have never thought of returning them or of relying upon an implied warranty. A year ago I bought 100 sheep infected with scab. It is a disease which is easily cured if taken in time. It is quite possible for sheep to have the scab and for it not to be known. I consider it quite probable Mr. Smith or any other gentleman might have sheep so diseased and not know it.

Mr. Winder.—I have been a dealer in sheep and cattle for forty-six years, and only once, to the best of my recollection, missed Partney fairs but never in my life before heard of the custom spoken of to-day. I have bought scabbed sheep and sold them also.

By Mr. Allison.—I never sought redress for buying scabbed sheep.

Mr. Smith, the defendant.—I am a cattle-dealer and a farmer at Frieston, near Boston. I had 500 sheep at Partney September fair. I bought 100 of Mr. Briggs, 100 of Mr. Oliver, near Spilsby, eighty of Mr. Brumby, seventy of Mr. Houlden, and some others were bought at Horncastle. I bought Mr. Oliver's on the 25th August. They all were sent in one drove from Frieston to Partney. They were four days upon the road. If any of them had been affected with scab I should not have thought of taking them. I first sold at Partney 100 to Mr. Charles Bramley; afterwards some to a gentleman near Peterborough; 204 to Mr. King, the plaintiff; fifty to Mr. Cole; and eighty to gentlemen who have been here to-day, but I did not know their names at the fair, as they paid in cash. I had no scabbed sheep that I know of. I have sold sheep at Partney for many years, but never heard of the custom which has been spoken of to-day. I had some sheep at Horncastle fair after Partney, and finding there was something suspicious about them I took them out of the fair and sent them to London.

William Oliver.—I occupy a farm under Lord Willoughby d'Eresby, at Eresby. I sold sheep to Mr. Smith a short time before Partney fair. Neither they nor any of my flock had scab.

Messrs. David Martin, Robert Martin, Samuel Smeeton, Longstaff, William Everington, David Briggs, John Byron, John Drury, Charles Bramley, Thomas Newton, William Horry, Henry Freshney, Ashlin Cutforth, all respectable and well known as large buyers of sheep in the North Lincolnshire fairs and markets, corroborated the evidence of Mr. Winder and the other witnesses for the defendant in denying the existence of the custom of which the witnesses for the plaintiff had spoken.

Mr. Toynbee declined to call any further witnesses, although he had more than twenty upon his list.

This being the defendant's case, *Mr. Allison* briefly replied.

His Honour put it to the jury whether they thought there was evidence to the custom.

The Jury.—We are of opinion there is no such custom.

His Honour.—Then the only question for you, gentlemen of the jury, now is, did Mr. Smith sell these sheep to the plaintiff knowing at the time they were unsound? If you are of opinion that Mr. Smith did not know the sheep were unsound, the verdict will be for the defendant. But if you are of opinion that he dealt unfairly with the plaintiff, and knew the sheep were diseased, your verdict will be for the plaintiff. I leave the case in your hands to say whether Mr. Smith has spoken the truth, and if not you will give such compensation to the plaintiff as you think proper.

The jury, after a short consultation, returned a verdict for the defendant.

ARMY APPOINTMENTS.

Veterinary Department.

The following acting veterinary surgeons have been permitted to resign their commissions:

John Henry Burbage.
John L. A. Poett.

ERRATUM IN NO. 423.

At page 131, line 14, *for* collapsed *read* coalesced.

THE

VETERINARIAN.

VOL. XXXVI. No. 425. MAY, 1863. Fourth Series. No. 101.

Communications and Cases.

OBSERVATIONS ON "SOUNDNESS."

By R. H. Dyer, M.R.C.V.S., Waterford.

(*Continued from p.* 209.)

Fistulous parotid duct may be considered as a sequel to strangles; so may glanders, bronchitis, roaring, thick-wind, &c. The parotid duct is seldom diseased, at least I have seen but few cases; when met with, however, it generally gives the practitioner much trouble. It is not probable a veterinary surgeon would overlook such an affection except in the hurry of a fair, and the seller ranks with the knowing ones. I have seen only three cases. The first was a patient at the College during my pupilage. Being "dresser" at the time, it afforded me an opportunity of collecting the saliva as it flowed from the duct during the process of mastication, and of ascertaining the quantity secreted. If my memory serves me, this horse left the institution cured. The other cases were my own patients; both of which, after much trouble and loss of time, yielded to treatment and got well. A horse with fistulous parotid duct is of necessity unsound.

I have heard of carious teeth having been mistaken for glanders. I don't exactly see how a carious tooth could be mistaken for glanders, so as to warrant a veterinary surgeon condemning a horse to the hands of the slaughterer; nevertheless, I have read such a statement, although I cannot now point to the record thereof.

There are symptoms which are analogous to those of glanders, such as a discharge from one or both nostrils, which

being offensive to the smell, would possibly lead the examiner to infer that the case was of long standing, and that either the cartilages or the bones themselves were implicated. I should imagine, if this were the case, other symptoms would be present which would corroborate or strengthen the opinion so formed. This has always been my experience, and I have never met with much difficulty in the matter. There is another affection which, I have no doubt, has often caused the life of many horses to be sacrificed; namely, abrasions upon the Schneiderian membrane. This is occasionally met with in severe cases of catarrh and in strangles. In such affections it will be necessary to look carefully for other and unmistakeable symptoms before recommending the destruction of a patient. In the other case, that of a carious tooth, there is occasionally much difficulty in forming a correct diagnosis, from the position the animal assumes, and from the fact of his being awkward and shy about the head. We have, however, a ready means of placing the animal in such a position that we can with comparative ease put the matter beyond doubt; that is, by throwing him, and examining the cavity of the mouth when down. I have not met with any young horses with carious teeth; indeed, it is a complaint of the teeth I have not seen much of in this country. A horse labouring under this affection would, for the time being, be looked upon as an unsound one.

Bronchitis sometimes remains as a sequel of strangles, and which, if not removed, would cause the animal to have some difficulty in passing most veterinary surgeons as to soundness, and it would in all probability become chronic, which necessarily deteriorates the value of the animal. The diseases of the respiratory organs will come in for a share of consideration in their proper course.

Having referred to some of the diseases most likely to fall under the notice of practitioners when examining horses as to soundness, I must proceed to carry out the observations first intended by me. Some of the affections passed in review seemed to call forth remarks that were not premeditated, and this caused a deviation from my proposed plan.

Our next step will be the examination of the eyes. I must confess I approach this subject with diffidence, feeling how important it is and how little it is understood by the public generally. When we take into consideration the structure of the visual organ, and the little we know of its functions, together with the fact how few of us have made the science of optics a study, and also the cursory manner the eyes of horses are examined as to their soundness, I repeat I feel

diffident in introducing the subject to the readers of the *Veterinarian;* there being innumerable and almost insurmountable difficulties in my way.

There are several modes employed by persons to examine the eye, but all of them aim at the same object, namely, that of ascertaining whether the eye be a sound one or not. I don't believe I am far out when I assert that very few examiners trouble themselves about an eye, provided it is free from actual blemish; and if neither opacity of the transparent cornea nor of the lens is present, and the eye is pretty clear, as a general rule, the horse passes sound as regards the eyes. In order to make myself understood, it will be necessary to consider in the first place the structure of some of the parts; afterwards to offer a few observations upon the eye as an optical instrument; otherwise, in all probability, some of the remarks may appear somewhat strange, and perhaps novel.

The eye is divided into the globe and its appendages. The globe is composed of tunics and refracting media, called humours. The tunics are three in number, viz.—1st, sclerotic and cornea; 2nd, choroid, iris and ciliary processes; 3rd, retina and zonula ciliaris. The humours are also three in number—aqueous humour, crystalline lens, and the vitreous humour. The sclerotic coat and the cornea form the external tunic of the eyeball, and give to it its peculiar form; the sclerotic invests four fifths of the globe, and the cornea the remainder. The sclerotic is a dense, fibrous membrane, thicker posteriorly than anteriorly; it is continuous posteriorly with the sheath of the optic nerve, which is derived from the dura mater; it is pierced by the optic and ciliary nerves and ciliary arteries; anteriorly it presents a beveled edge for the reception of the cornea; the anterior surface of the sclerotic is covered by the tunica albuginea, which is formed by the expansion of the tendons of the four straight muscles; the tunica albuginea is partly covered by the conjunctiva; at the entrance of the optic nerve the sclerotic forms a thin, cribriform lamella, which is pierced by a number of minute openings for the passage of the nervous filaments; one of these openings is larger than the rest, and is situated in the centre of the lamella which is called the *porus opticus;* it gives passage to the *arteria centralis retinæ*. The *cornea* is the transparent projecting layer which forms the anterior fifth of the globe of the eye. In form it is circular, being *concavo-convex;* it is received by its thin, sharp edge within the bevelled border of the sclerotic. It consists of four layers: first, the *conjunctiva;* secondly, the *cornea proper,* which is constituted of several thin lamellæ, connected together by an extremely fine, cellular tissue; thirdly, the *cornea elastica,*

which is a fine, elastic, and exquisitely transparent membrane, exactly applied to the inner surface of the cornea proper; the last is the lining membrane of the anterior chamber of the eyeball. The *choroid* is the vascular membrane of a black, soft, and delicate texture, situated *immediately under the sclerotic,* to which it is connected by a very fine, cellular tissue, and by the passage of nerves and vessels. Internally it lies in simple contact with the retina; it is pierced posteriorly for the passage of the optic nerve; it is connected anteriorly with the iris, ciliary processes, and with the line of junction of the cornea and sclerotic, by a dense, white line, called the ciliary ligament, which surrounds the circumference of the iris like a ring. The choroid is formed of three layers—an external or venous layer, termed the *venæ vorticosæ,* which layer is that connected to the ciliary ligament; secondly, the *middle* or *arterial layer,* made up principally of the ramifications of minute arteries, which is called the tunica Ruyschiana:* the reflections of this layer form the ciliary processes. The third and last layer is the *pigmentum nigrum;* it is a delicate membrane, situated internally; it presents several colours spread over the choroid, which are known by the names of pigmentum nigrum and *tapetum lucidum;* this latter is situated above the optic termination.

The *ciliary ligament* is the bond of union between the external and middle tunics of the eye, and serves to connect the cornea and sclerotic at their line of junction with the iris and outer layer of the choroid. The canal of Fontana is known to exist in this ligament; it is a vascular canal.

The *iris* forms the curtain or septum between the anterior and posterior chambers; the opening in its centre is termed the pupil, the shape of which is horizontally elliptical; the margins of the iris are obtruded upon by several small, pendulous bodies, termed the *corpora nigra.* The front surface of the iris points to the cornea, and the posterior towards the lens. This muscular arrangement is composed of two layers; the anterior one consists of radiating fibres, which converge from the circumference towards the centre, and produce an enlargement of the opening; the posterior or circular surrounds the pupil like a sphincter muscle, and produces contraction of the pupil. The posterior surface of the iris is of a deep-purple tint, thence termed *uvea,* from its resemblance in colour to a ripe grape.

The ciliary processes consist of a number of triangular

* "Ruysh was born at the Hague in 1638; his whole life was spent in making injected preparations. He discovered this layer, hence the name."—*Wilson.*

folds, formed by the plaiting of the middle and internal layer of the choroid; they are covered with a thick layer of pigmentum nigrum; when this is washed off, the processes are rather white.

The next tunic is the *retina*. It is composed of three layers—external, or Jacob's membrane; middle, or nervous membrane; and the internal, or the vascular membrane. *Jacob's* membrane, when examined by the microscope, is found to be composed of cells having a tessellated arrangement; it is said to be a *serous* membrane. The *nervous* membrane is the expansion of the optic nerve; it envelopes the vitreous humour. The *vascular* membrane consists of the ramifications of the arteria centralis retinæ and its vein; its branches are continued anteriorly into the zonula ciliaris; it is a branch of the ophthalmic artery.

The zonula ciliaris is a thin, vascular layer, which connects the anterior margin of the retina with the anterior surface of the lens near to its circumference; the under surface of the zonula is in contact with the *hyaloid membrane*, and around the lens forms the anterior, fluted wall of the canal of Petit.

The *humours*.—The aqueous humour is situated in the anterior and posterior chambers; the anterior chamber is the space intervening between the iris and pupil behind. The chambers are lined by a thin layer, which is the secreting membrane of the aqueous humour; it is a weak albuminous fluid, with an alkaline reaction; its sp. gr. is little more than water. The posterior chamber is the space bounded by the posterior surface of the *iris* and pupil in front, and by the ciliary processes, zonula ciliaris, and lens behind.

The vitreous humour forms the greater bulk of the globe of the eye. It is an albuminous and very transparent fluid, enclosed in a membrane of extreme delicacy, the hyaloid. From the inner surface of this membrane many thin lamellæ are pointed inwards, and form compartments or cells in which the fluid is contained. A tubular canal has been found in the centre of the vitreous humour, through which a minute artery is conducted from the arteria centralis retinæ to the capsule of the lens.

The *crystalline* humour or lens is situated immediately behind the pupillary opening, and is surrounded by the ciliary processes. It is more convex on its posterior surface than on the anterior; it is imbedded in the anterior part of the vitreous humour, separated from it by the hyaloid membrane. It is invested by a transparent, elastic membrane, the capsule of the lens, which contains a small quantity of fluid, called

liquor Morgagni, and is retained in its place by the attachment of the *zonula ciliaris*. The lens consists of concentric layers, of which the outer are soft, the next firmer, and the central form a hardened nucleus. These layers are best demonstrated by boiling.

The appendages of the eye are placed in close approximation to the globe; they are divided into external and internal. The upper and lower lids unite and form the canthi; the lids possess a muscular power of closing and opening; they can shut out all offending agents; they are the regulators of the rays of light. The muscles of the lid are *not* voluntary; the superior lid is more strongly developed than the inferior, it has more motion also. From the outer surface of the lid are growing long hairs; they must be intended for some specific purpose, and they doubtless are for the purpose of protecting the organ from insects, hay-seeds, &c.; each one conveys sensation; they were by the late Professor Coleman called *watch-dogs* of the eye; they ought never to be cut away. These hairs are also found on the under lid, but not so numerous. The range of hairs upon the upper lid are performing the office of shrouding the eye from the rays of light coming from above, which are more powerful than those coming from below; the other appendages are the eyelashes, the caruncula lachrymalis, and the lachrymal apparatus, together with the conjunctiva, Meibomian glands, cartilages (the horse has no tarsal cartilages), cellular membrane, arteries, veins, nerves, absorbents. The tegumentary cellular tissue of the lids is very loose, and is remarkable for the absence of fatty matter; it is very liable to serous infiltration. The Meibomian glands secrete a mucus to prevent impediment in opening the lids. The conjunctiva is the mucous membrane of the eye, it is found to cover the whole of the anterior surface, and is then reflected upon the lids, so as to form their internal layer to the cartilago-nictitans, and passes down to give a lining to the *ductus ad nasum*. It is most vascular where it lines the lids; where it covers the cornea it is very thin and closely adherent, and no vessels are seen there in the absence of inflammation; it differs from mucous membranes in being transparent.

The *caruncula lachrymalis* is a little tubercle situated on the inner canthus; it is principally covered by common integument, a very small portion only being covered by the conjunctiva. It is intended for the purpose of directing the tears into the puncta lachrymalia. In man it is said to be glandular.

The lachrymal gland is situated underneath the orbital arch; to gain a view of it the removal of the bone is necessary;

it is pale in colour, and is of an irregular shape; it is a conglomerate gland, very much resembling externally the salivary glands; its office is to secrete the tears, which are conveyed by its ducts upon the conjunctiva, where they become diffused in two ways, namely, by their own gravity and also by the motion of the lids. The tears are of a saline character, and possess irritating properties, often observed in ophthalmia.

The cartilago-nictitans is a concavo-convex body, lodged behind the inner canthus, between the globe and side of the orbit; it is covered by conjunctiva, and is attenuated on its anterior extremity; it is imbedded in adipose substance; its action is principally mechanical. The late Mr. Liston informed me, when examining me for my diploma, that he had discovered two small muscles which aided in performing its movements; the names of them I don't remember. Its use is to dislodge anything foreign on the eye.

Puncta lachrymalia are two small openings piercing the inward margins of the two lids near the root of the caruncula lachrymalis; the superior is smaller than the inferior.

The ductus ad nasum is the canal intended for the passage of the tears from the eye to the nose; it passes through the lachrymal bone, between it and the anterior turbinated bone, to the cuticular surface of the inner and lower part of the nostril; its terminating upon cuticular membrane is to prevent the tears from irritating the mucous surface.

The arteries which supply the globe of the eye are the ophthalmic and the arteria centralis retinæ. The appendages are supplied by the internal maxillary. These several parts are well taken care of by the large amount of adipose substance found in the orbital cavity; the case itself is lined by a dense membrane, said to be a continuation of the dura mater. The fatty matter being in a semifluid state during the life of the animal, admits of the various movements which the eyes of the horse are called upon to perform, and it is the absence of this fatty substance, through absorption, which gives to young animals the appearance of old age.

The globe of the eye is regarded as an optical instrument of very complex construction, beautifully arranged and adapted, into which the rays of light are received, and by the medium of which agent the horse is able to take cognisance of the form, size, colour, and position of bodies that transmit or reflect it. The globe is placed in the cavity of the orbit most laterally and obliquely, which cavity is formed of eight bones; the two cavities are formed of fourteen bones; four form the outer—the frontal, malar, unguis, and squamous-temporal

bones (in the human subject the frontal does not contribute to its formation); the inner part is formed by the sphenoid, ethmoid, palatine, and superior maxilla (the cavity of the orbit in the human subject has no post. orb. fossa): it is clothed with a shell of bone.

The eyeball is placed nearer to the frontal than to the temporal side; the globe is suspended in front of the eyelids, laterally and posteriorly, by its muscles and by the optic nerve, which, together with its vessels, are enveloped in fat; the size of the globe differs in different individuals; some large horses have small eyes; again, small horses are seen with large eyes, and so on. Its figure is said to be a compound of two spheres of different diameters, united in front by an elliptical line. Its axis points to a horizontal line more outward than forward, and more forward than downward; this line intersects another horizontal line drawn directly outward at an angle of about 70°, and one drawn directly outward at about 20°; the inclination downward, however, will vary with the position of the head. The axis of the eyeball is not exactly that of the orbit, though it likewise takes a direction more outward than forward, for in the ordinary position of the head it is perfectly horizontal, and in consequence of the prominence of the eye next the temple, inclines more forward than the orbital axis, probably by 10°; the motions of the eye will vary its axis considerably, and especially in the lateral direction. The eyes, placed as they are in the head, command nearly a whole sphere of vision; thus the horse is amply provided with visual means for seeking food and avoiding danger.

To my notes, taken at Professor Spooner's lectures when a student, to Wilson's 'Vade Mecum' and Percival's 'Anatomy', I am indebted for the refreshing my memory has received in enabling me to be so precise in the anatomical description of the eye and its appendages.

(*To be continued.*)

COMMENTS ON A RECENT CASE OF RUPTURE OF THE COLON IN A HORSE.

By J. C. Broad, M.R.C.V.S., Market Street, Paddington.

In the *Veterinarian* for last month a case of rupture of the colon of a horse is reported by Mr. Billington, of Henham, Essex, who expresses an opinion that the rup-

ture had existed for several days previous to the death of the animal.

Cases of rupture of the intestines are certainly by no means uncommon in the horse, and they are, as far as my experience goes, usually accompanied by a chain of symptoms in most respects similar to the one reported by Mr. Billington, but his is of such an extraordinary nature that it will, I think, be found to be at variance with the experience of the majority of veterinary surgeons. Had the case been under the personal care of Mr. Billington from the commencement, he would have had an opportunity of witnessing the symptoms as they presented themselves, and consequently would have been in a much better position to give an opinion on it; but as I understand the record, he did not see the horse until *after* its death, and had therefore nothing to guide him in forming the opinion he has expressed, except the history he obtained of the case from those persons who had had the care of the horse while alive and in health. It likewise does not appear that the animal had been submitted to any medical treatment whatever, or that the attention of any veterinary surgeon had been called to it while alive, and the replies obtained by Mr. Billington to his inquiries on the subject after death appear to have been very vague and unsatisfactory. It was admitted that at times the horse "seemed griped;" but we are not informed whether those symptoms were observed at intervals during the whole period of his illness or only during the latter part of his existence. Mr. Billington further states that he was called upon to perform the *post-mortem* examination on the 27th of December, the day after the horse died.

The whole history of this remarkable case is, that on the 19th the horse was first observed to be unwell and refused his food; he was rested for three or four days; but not improving, he was again put to work on the 22nd, and continued working until the 24th, "without evincing any marked incapability to perform his duty;" and from this date we have no further account till death.

If it be admitted that the rupture had existed for several days, it is certainly a most extraordinary circumstance that none of those symptoms should have presented themselves which are invariably observed to be present in such cases, and that the horse should have continued to perform his work "without evincing any marked inability to do so."

Upon a careful consideration of this case, I am inclined to the belief, which is confirmed by practical experience in cases of rupture of the intestines, that few practitioners will be

found to support the view taken of it by Mr. Billington; for if we are to adopt that view, here was a horse working for several days with a ruptured colon, and, as a consequence, extravasation of the ingesta covering the whole of the intestines and interior of the abdomen, without producing a symptom indicative of any pain or inconvenience; a state of things which I, for one, can most confidently affirm to be utterly at variance with *my* experience, extending, as it does, over a period of twenty-five years, and during which I have seen a great number of cases of rupture of the intestines, all of which have, without an exception, been accompanied with the most acute pain, and that of an unremitting character, and death, generally speaking, resulting in a very few hours afterwards. The question, then, that arises in this remarkable case is, At what period did the rupture really occur? I suggest that it did not take place until *after* the 24th, because I consider it wholly incompatible with professional experience that the horse *could* have performed his work as described under the circumstances stated.

The view I take of the matter, therefore is, that from the commencement it was simply a case of indigestion and loss of appetite, which, from want of proper attention, gradually went on to acute inflammation of the bowels, and that the rupture of the colon which undoubtedly followed *was* accompanied by the acute symptoms usually indicating its existence, although at the time those symptoms presented themselves they were unobserved. Having no account of the case after the 24th until we find it in the hands of Mr. Billington when he is called upon to perform the *post-mortem* examination, we have consequently no data to guide us in determining the particular question in this most remarkable case—namely, the length of time preceding death during which the rupture really existed.

FRACTURED RADIUS SUPERVENING A KICK SEVERAL DAYS PREVIOUSLY INFLICTED.

By "Argus."

The following case may possibly be deemed sufficiently interesting for insertion in the *Veterinarian;* for though not very remarkable, it is, I think, an uncommon one.

About a month ago, a gray Arab trooper was brought to

the hospital with a small, contused wound on the inside of the near fore leg, caused by a kick from another horse. The animal, although lame, was able to walk from the parade ground to the infirmary stables, a distance of half a mile. On arrival I examined him, but found no crepitus or other sign of fracture, and therefore gave directions for such treatment as is usual in cases of injury from kicks. The wound was situated about six inches below the superior extremity of the radius.

The patient progressed favorably for several days, occasionally resting part of his weight upon the injured leg, and not the slightest symptom of constitutional disturbance was to be seen. On the sixth day, however, I was sent for suddenly to see the horse, and on my arrival at the hospital I found him lying down. The peculiar position of the near fore leg at once attracted my attention, and upon examination I discovered that it was fractured. The ends of the broken bone could be distinctly heard grating against each other when I moved the leg. I applied for a board of officers, and had the horse shot at once.

On making a *post-mortem* examination I found the radius fractured obliquely right through its shaft, and about an inch above the spot where the kick had been received. The bone was in two pieces. In addition to this oblique fracture of the body of the radius, there was a crack longitudinally through its inner face, extending from the seat of injury upwards into the upper (superior) extremity, and a corresponding one running downwards as far as the inferior extremity.

From inquiries I made I learnt that, just before I was sent for, the horse had made a sudden bound sideways, to avoid the bite of another horse who had got his head loose, and that from that moment he appeared to have lost the use of the near fore leg. Of course the bone must have been fractured in the first instance by the kick, but is it not somewhat singular that no displacement should have taken place during the half-mile walk to the hospital, and that the horse rested his weight upon the leg for five days prior to this sudden bound of his, which appears to have brought matters to a crisis?

It is just possible that if the patient had been placed in slings at first and kept thus for a month, he might have recovered. But slings I have never seen in India, and I have never been able to procure any from the Government stores. Luckily this horse was no great loss, as he would have been cast in a couple of months for being old and worn out.

Notwithstanding the very severe nature of the injury which

this animal had received, and from which one would suppose he must have suffered considerable pain, I noticed that up to the last moment he went on eating his grass as quietly as possible, as if nothing at all were the matter with him.

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 146.)

The next important plant in this division is the *Atropa belladonna*. This, like the *Solanum dulcamara*, the plant last described, belongs to the class of Exogens and to the natural order Solanaceæ. The following will be found a brief outline of its botanical characters:

Atropa belladonna (*deadly nightshade* or *dwale*).—"*Flowers* solitary, imperfectly axillary, stalked, about an inch in length, rather drooping. *Calyx* campanulate, five-cleft. *Corolla* campanulate, twice as long as the calyx, greenish towards the base, but of a dark purple towards its five-lobed, equal border. *Stamens* five, distant above. *Style* as long as the corolla. *Stigma* capitate. *Berry* seated in the enlarged calyx, lobose, two-celled, of a shining, violet-flake colour, about the size of a small cherry, with a longitudinal furrow on each side, containing numerous reniform seeds, in a mawkishly sweet but neither agreeable nor nauseous pulp."—Royle.

The name Belladonna signifies "fair lady," and is supposed to have been given to this plant in consequence of its juice having been used by the Italian ladies as the principal ingredient in a favorite cosmetic. This indigenous, perennial plant is found growing in waste places and hedge-banks in many parts of this country. It thrives best on a calcareous soil, attains a height of from three to four feet, flowers in June and July, and ripens its fruit in September. Its dangerous properties have been known from a very early period. "It has been supposed that it was this plant which produced such remarkable and fatal effects upon the Roman soldiers under Mark Antony, during their retreat from the Parthians. The Scotch, under Macbeth, are said to have mingled the juice of belladonna with a donation of wine and ale which they supplied to the Danish army of Sweno during a truce; the Danes, becoming stupefied, were murdered at leisure by their treacherous opponents. All parts of the plant are more

or less poisonous, but the parts chiefly employed in medicine are the leaves and root. The former should be collected about the time of flowering and carefully dried; they "have short foot-stalks, lateral, generally two together, of unequal size, broadly ovate-acute, entire, smooth, and soft, four or five inches in length, often with hairs on the under surface, of a dull-green colour, very little odour, and a slight bitter taste." The above characters will enable them to be distinguished from the leaves of *Solanum dulcamara* and *Solanum nigrum*, with which they are not unfrequently mixed, and sometimes entirely substituted. The root, which should be collected in the autumn, or early in the spring, is generally about a foot in length, from one to two inches thick, branching and fleshy, internally white, but when cut and dried, of a gray colour, without odour, having a slightly bitter taste. When analysed, all parts of the plant are found to owe their activity to a nitrogenous substance, named atropia, which possesses the following characters:—Crystallizes in silky, transparent prisms, odourless, soluble in alcohol and ether, very slightly so in water, at 212° Fahr. it is converted into vapour. According to Liebig, its composition is $C_{34}\,H_{23}\,NO_6$, its atomic weight being 289."

As a medicine, belladonna is generally used by the veterinary surgeon in the form of an extract prepared from the leaves, being their inspissated juice. Professor Morton says —"Its action is that of a narcotic and sedative, relieving pain and lessening both the force of the pulse and the number of its beats; hence its use is indicated in all those diseases where an undue action of the vascular and nervous systems is present, as tetanus, carditis, and pneumonic affections generally." It is sometimes employed with advantage to relieve pain by its topical application in the form of the extract spread on linen, and its effect, when applied externally to the eye, is to cause powerful dilatation of the pupil. Given in large doses, it produces a laxative effect on the bowels, especially in cattle. The dose of the extract is from ʒj to ʒiij for horses and cattle.

As a poison, it acts much more energetically upon man and carnivorous animals than it does upon herbivorous animals. Upon man the effects are of a violent description, and many fatal cases are recorded of death being produced by this plant in several instances, from the fruit having been partaken of in mistake for the black cherry, which it much resembles. It first causes considerable excitement, the pupil of the eye becoming much dilated, dryness of the mouth and throat, numbness of the face, giddiness and delirium, accom-

panied sometimes with violent gestures and fits of laughter; pulse small, hard, and quick; coma and convulsions, generally terminating in death.

Amongst our domestic animals the dog seems the most susceptible of its poisonous effects. "Christison says that half an ounce of the ordinary watery extract is fatal to dogs in about thirty hours when given by the mouth, half that quantity in twenty-four hours when introduced into a wound, and even smaller doses when injected into the jugular vein. Orfila says that forty or fifty grains of the watery extract injected into the jugular vein of dogs have proved fatal, causing dilatation of the pupil, plaintive cries, efforts to vomit, weakness of the posterior extremities, staggering, frequent pulse, a state like intoxication, and death."

A horse, according to 'Miroud,' has been known to eat eight pounds (troy) of the leaves without any ill-effects, and a pound of ripe berries have been given to an ass with like effect. Some authors assert that sheep and goats eat it with impunity, without any obvious harm. Much, however, yet remains, and far more extensive and careful investigations are required to be carried out, ere the somewhat contradictory effects of this and other plants upon animals is set at rest. We may be assured that this and many more plants of a like nature are very much influenced, as regards their active properties, by the situation and soil in which they are grown, a fact which I am inclined to think has not received sufficient attention, and in some measure accounting for the different results which have been obtained.

The *post-mortem* appearances are generally as follows:—The vessels of the brain congested with dark, fluid blood; the eyes sometimes partly open, and the pupils dilated, and different parts of the mucous membrane from the throat to the intestines marked with peculiar red spots. The following tests, copied from Dr. Taylor's work, will indicate the presence of atropia:—"Iodine water gives with its salts a dense, brown precipitate; tannic acid precipitates it of a dirty white; gallic acid has no effect; nitric and sulphuric acid dissolve it, but do not produce any change of colour; sulphuric acid and bichromate of potash produce with it green oxide of chromium. It is rendered turbid by chloride of platina, and is precipitated of a yellowish-white colour by chloride of gold."

(*To be continued.*)

ON ULCERATION OF THE INTESTINES.

By A. Owles, M.R.C.V.S., V.S., Staff at Aldershot.

I do not presume to think myself competent to solve the questions raised by Professor Varnell on the case of ruptured colon recorded by Mr. Billington in the *Veterinarian* for April. Still, as I believe ulceration and perforation of the coats of the intestines to be a more frequent cause of death in the horse than many imagine, I am induced to offer the following remarks, and also a brief account of some cases of diseased and ulcerated intestines which came under my care in India, in which the symptoms were similar to the one now under consideration, and the immediate cause of death was also the same, viz., rupture or perforation of the colon. The symptoms of the cases alluded to were not peculiar to any recognised form of abdominal disease, although clearly indicating disease of that part of the organism, the leading ones being intermittent slow pains, irregular action of the bowels, with a frequent passing of slimy mucus; an accelerated, small, and irritable pulse, dejected countenance, capricious appetite, and loss of flesh, with a gradual increasing yellow tinting of the mucous membranes. These symptoms lasted some ten or twelve days, when acute pain, accompanied by a rapidly sinking pulse and strength, terminated the life of the animal in a few hours. The latter symptoms might enable one to hazard an opinion as to the probability of rupture being the immediate cause of death. *Post-mortem* examination showed, in addition to the escape of fæcal matter from the intestines into the peritoneal sac, that the mucous coat had been first affected with subacute inflammation and ulceration, and, as a consequence, thinning of all the coats at certain parts, till perforation took place; which lesion, with the escape of the fæcal matter and fluid, quickly induced such an amount of inflammation and nervous disturbance as, acting on a debilitated subject, killed the animal.

Mr. Billington does not describe the state of the inner coats of the colon in the case recorded by him. I should, with due deference, incline to the opinion that the rupture resulted from some morbid change in the coats of the intestine, and that it did not take place at the early stage of the disease. This opinion, if correct, would explain away the second question. It does not seem easy to understand

how the animal could possibly have survived the shock and inflammation for eight days, which must inevitably result from a rupture, with considerable extravasated ingesta on the surface of the peritoneum.

ON CONDY'S FLUID AS A THERAPEUTIC AGENT.

By W. F. Cross, M.R.C.V.S., London.

Sirs,—I have read with very great satisfaction the review of Condy's work on 'Air and Water' contained in the last number of the *Veterinarian*, and your favorable recommendation of the disinfecting fluid manufactured by that gentleman. While fully appreciating your observations on the more recondite and scientific applications of the remarkable chemical salts of which that preparation is composed, I am very desirous of calling the attention of yourselves and readers to the practical value of Condy's fluid as a remedial agent for a large number of the diseases to which domestic animals are peculiarly subject.

In the management of animals cleanliness and purity are the most important conditions. When these are not duly secured, indisposition and disease are necessary consequences. The free access of pure air and the abundant use of water, with plenty of pure food, are the natural means for securing animal health. When once engendered, however, the diseases of animals prove very frequently to be beyond the control of ordinary cleanliness. They then require the use of substances calculated to stimulate the system to throw off morbid products, and further demand the employment of agents having the power of neutralizing the diseased matters generated by foulness—in other words, of antidotes to unclean products, whether external to the animal or developed in its body.

Of all known substances, oxygen—especially when in the active or organic state—has been proved to be the most powerful in antidotal properties. However much opinions may be divided respecting atmospheric ozone, there is no room for doubt as to the reality and power of the oxygen of combination, or *nascent* oxygen. As it exists in certain chemical salts, such as the alkaline permanganates, this remarkable element can with the utmost certainty be relied on for

counteracting and destroying all foul and morbid secretions and emanations from animals. Being in those compounds combined with substances destitute of deleterious properties, it can with perfect safety be administered in every form of disease, whether external or internal.

Taking advantage of these facts, I have for several years back employed the alkaline permanganates in the well known commercial form of "Condy's Fluid," in a great variety of diseases of domestic animals, with the most satisfactory results. In such cases as grease and farcy in the horse, distemper in the dog, mouth and foot disease in the ox, foot-rot, &c., in the sheep, Condy's Fluid has proved in my hands eminently efficacious.

Trusting that these few lines may have the effect of inducing others to give this valuable preparation a fair trial, as a remedial substance in veterinary medicine, as well as a deodorizer and disinfectant.

I remain, Sirs, &c., &c.

To the Editors of 'The Veterinarian.'

COMPLICATED DIFFICULT PARTURITION IN A MARE.

By R. Littler, M.R.C.V.S., Long Clawson.

At 4 a.m. of the 17th of April, 1859, a large, half-bred mare, ten years old, the property of Mr. George Swain, of Branstone, Leicestershire, was noticed to be unable to foal. I was immediately sent for to assist her, and was in attendance as soon as the distance of seven miles on an ordinary hack would admit. The mare I found in a straw yard, being kept incessantly moving, in order to avert or mitigate the violent throes of parturition, which had now existed about two hours and a half. Protruding from between the labia pubendi, during each throe, were the mare's urinary bladder and three fœtal feet. The former was completely inverted, and, from its elastic or yielding nature, apparently contained gas on its peritoneal surface, distending it to the size of an inflated small sheep's bladder. It was not, however, observed to have been injured, either by exposure to the air, or by the repeated and forcible compression to which it had been subjected by the fœtal extremities during the parturient paroxysms. Its mucous membrane was not the least discoloured, being clean and shining, without the slightest

blush of congestion of its blood-vessels, and plainly displaying the ramifications of its larger veins. The fœtus was lying on its left side, with its head and neck thrown backwards, extending along the floor of the uterus from the right to the left flank of the mother. The fore feet had passed out of the vagina, and the right or upper hind foot occupied a place within it. The position of the left hind extremity described a line parallel to that of the head and neck, the hock being below the pubes, whilst the foot was in the right flank, beyond the reach of the human hand. The first step taken in order to relieve the suffering animal consisted in an effort being made to return the displaced organ to its accustomed position. This, however, was readily effected by equable pressure being exerted by the hand on the surface of the viscus, when the elastic matter was speedily expelled, and the collapsed body easily passed through its widely dilated neck, which was relaxed to such a degree as to admit of the free introduction of the three middle fingers. The replacement of the organ was now entirely useless, for every expulsive effort brought it again into the vagina, and the frequent attempts made to prevent its protrusion by the operator placing his arm firmly on its neck, while his hand was engaged in rectifying the position of the fœtus, were perfectly ineffectual, and even the application of the hand of a strong and dexterous assistant over the opening was equally unavailable. Such being the state of things, it was determined to disregard this lesion for the time being, and to direct attention to the extraction of the fœtus. Accordingly a cord was immediately attached to the right hinder leg lying in the vagina, and the hock of the left hinder extremity being accessible, another cord with some difficulty was passed around the lower part of it. Gentle traction was then used until both the fetlock and foot could be freely manipulated. The fore extremities were then gradually, but somewhat forcibly, thrust into the uterus, without allowing the hinder ones to recede, while the foot of the left hinder extremity, being guarded by and in the hand over the brim of the pelvis, was conducted into the vagina to its fellow. In a few seconds a fully-matured, dead fœtus, possessing a lateral concavo-convex face, was comparatively easily extracted, and the placenta removed. It was utterly impossible by the means used to obviate intrusion of the bladder, even during the transit of the fœtus. It, however, had not received any visible laceration of structure by the violence it had endured; but its mucous membrane, throughout its whole extent, was thickened and congested, and the effusion of blood on its

abraded surface communicated to the organ the external characters of a spherical mass of coagulated arterial blood. After being washed, it was readily placed in its natural situation by gentle pressure, and its cavity explored, in order to recognise, and, if necessary, to correct local deviation. No subsequent displacement took place. Thirty-five minutes elapsed during the operation. The mare was now given two drachms of opium, followed by half a drachm every sixth hour; her body clothed, legs bandaged, and an abundant bed allowed her in a roomy box. She was also allowed a little green hay; but her diet consisted chiefly of bran mashes, made with the infusion of linseed, which last named was her beverage, and which was freely partaken of by her. She was not suffered to lie down.

During the day about half a pint of thick, dark, bloody urine was frequently evacuated, without any preceding or subsequent manifestation of uneasiness. Next day the mare exhibited a lively appearance, took her restricted allowance of food, and expressed an anxiety for more; possessed a moist mouth of natural temperature, warm extremities, a slight diaphoresis excited by the clothing, and a full, compressible pulse, numbering forty-eight in a minute. Her bowels had acted several times on soft fæces. She experienced some difficulty in the movement of her hinder limbs, apparently the effect of muscular debility; the urine, thick and sanguineous, was passed in small quantity about every hour, without, however, inducing any obvious annoyance. As no untoward symptoms were shown, the treatment adopted was essentially prophylactic, and was simply comprised in the use of clothing, mucilaginous and demulcent aliment, and sedative medicine. The latter was now represented by Fleming's tincture of aconite, and, as a substitute for the opium previously given, it was administered in doses of ten minims in a ball, every fourth hour, until a drachm had been given. On the fourth day the weakness of the hinder parts had become less conspicuous. The urine, still possessing its sanguineous appearance, had assumed a transparency, and was retained in considerable larger quantity. On the sixth day it had acquired its natural visible characters, and was evacuated less frequently, and in greater amount. The mare now appeared to possess perfect health, and, a few days more having elapsed, she resumed her ordinary work, in which she suffered no inconvenience from the effects of this apparently formidable and complicated parturient difficulty.

The above case is selected from three somewhat analogous cases recorded in my veterinary register.

A CASE OF PROLAPSUS UTERI AND HÆMATOSEPSIS.

By G. E. Cooper, Student of Veterinary Medicine, Ashbourne, Derby.

On the 5th of March we were sent for to see a cow, the property of Mr. Gilman, Shirley Mill, five miles from this place. It was a case of prolapsus uteri; but being from home in another direction, it was several hours before we could attend. On our arrival we found the uterus completely inverted, the organ protruding as far as possible. After some difficulty it was returned, and the skin on each side the vulva was stitched, to prevent its return. As the animal seemed somewhat excited, the pulse full and rather increased,

Ol. Lini, ℥xij cum Tr. Opii, ℥iss,

was administered.

6th.—We visited the patient, and found the pulse about 50 and sluggish; extremities warm and bowels open; she had, however, an anxious look, and no appetite. A grinding of the teeth also existed, indicative of pain. Gave—

Spts. Eth. Nit., ℥iss;
Tr. Opii, ℥j;
Aquæ, q. s.

Another draught composed of the same medicaments was ordered to be given at night.

7th.—We again visited our patient, and found the symptoms about the same as yesterday, except that there was a more dejected expression of countenance. The pulse was lower and feeble. Repeated the Spts. Nit. Eth. in draught, combined with a laxative, and left instructions for a similar draught, to be given every three or four hours. We saw her about 10 o'clock a.m., and by 7 o'clock p.m. she was dead.

The next morning we decided on making a post-mortem examination, which, however, we were not able to do until the following day. On taking off the integument a quantity of fetid gas escaped from the superficial areolar tissue, and one side of the body seemed to be in a putrescent state, being quite green and gangrenous. The lungs and heart were in similar condition, though not so much decayed in structure. The rest of the viscera were healthy, with the exception of the uterus, which was rather discoloured, but not to an unusual extent, and not at all injured. The muscular structure on one side of the animal was so broken up, that

when the butcher came to cut her up the attachments were so slight that some of the bones fell out as clean as if they had been boiled for hours.

Remarks.—There are some things connected with this case that are rather singular. 1st. On our last visit to the patient there were no indications of immediate death about her: apparently the disease of which she died could not then have made much progress. 2nd. The extreme rapidity with which the animal sank, for on the morning of the seventh (the day she died) she both ate and ruminated. 3rd. The singularity of the disease occurring after the prolapsus had taken place, for we should naturally think that diseased action would have been determined more particularly to the uterus. Perhaps you will oblige me by saying whether you consider the prolapsus of the uterus had anything to do with the animal's death from hæmatosepsis.

[The changed condition of the blood in this case we consider to have depended on absorption of deleterious matter from the uterus—the lochia—which may be said to have acted as a ferment to the vital fluid, and quickly produced such an alteration of it as to render it unfitted for the maintenance of life. Similar cases are not unfrequent.]

SINGULAR CASE OF FRACTURE OF BOTH HUMERI.

By J. D. Peech, M.R.C.V.S., Wentworth.

I forward per Midland Railway two fractured humeri, which accident, I think, is an exceedingly unusual one, as occurring in the same animal and at the same time. The history of the case is very brief, and, I regret to add, not very satisfactory.

A brown filly, out of a thoroughbred mare, by a roadster, the property of G. W. Chambers, Esq., of Clough, near Rotherham, was placed in the keeping of a horse-breaker for the completion of her education, having been partly broken by the bailiff of her owner. For several days the mare had been ridden, and went, I believe, very well, having shown, hitherto, very little temper.

On Thursday the 5th of February, she was ridden as usual, and at the latter part of the day—according to the breaker's statements—she began to be a little ungovernable, in consequence of which he began to "riot her," but nothing unusual happened.

On the following morning, Friday, she was again taken out, and went to the meet of the hounds. I should here remark that the bailiff instructed the breaker, on his leaving, not to keep her out long, indeed not beyond an hour or two, as she had not fed well during the night. These instructions, however, he failed to observe, and kept her out for several hours. Nothing, indeed, was heard of him until night, when a message was sent to say that the mare had fallen on the road, near Rotherham, and was unable to rise. On receipt of this information the bailiff immediately went, and found the poor creature in the most deplorable condition possible, a covering of straw and rugs was provided for the night, and an occasional restorative administered.

On the following, Saturday, morning I was requested to see the mare, when I found her completely prostrated. The circulation was accelerated and feeble; the mucous membranes highly injected; but the eye itself remarkably bright. She had urinated, and a small quantity of feculent matter had been voided during the night. The limbs were reported to be useless, which I found to be too true, the anterior ones being especially so, and much worse than the posterior. My first impression was that injury had been done to the spine, causing this paralysis, for the position the mare was in prevented my making a full examination.

I had her carefully placed on a large door, and this put on a "hurry" and drawn home by a horse. It was reported to me that on the way home she never moved a limb, for I could not stop to see her conveyed home, having a long journey of upwards of forty miles before me. Instructions were given for her treatment, which consisted in the application of a counter-irritant to the spine, and the exhibition of a little aperient medicine, with gruel and diffusible stimulants. I saw her again on my return home in the evening, when she appeared somewhat easier.

On Sunday the counter-irritant was repeated, and a liberal supply of gruel given, which she drank freely. Similar treatment was continued for a day or two; but there being no improvement which would warrant us keeping her any longer, I considered the most prudent course would be to destroy her, which was accordingly done.

Post-mortem examination.—On removing the integument nothing unusual presented itself until the butcher came to the shoulders, when an assistant, raising one of the legs, remarked that he thought it was broken. It was examined by several persons present, all of whom concluded that it was broken. It was then left until my arrival. I cut down upon the fracture,

and a quantity of blood and serum escaped with some shattered muscle and several small fragments of bone. The limb was then removed, and also the posterior extremity of the same side, and the body rolled over for the removal of the other limbs, when, curious enough, the other fore extremity was found to be also broken, the fracture being worse if possible than its fellow.

The internal viscera were found to be healthy, but the spine had sustained a severe injury, which commenced at about the seventh dorsal vertebra. For five or six vertebral lengths it was curved on itself, and the intervertebral discs and ligaments were very much injured. On cutting into the spinal thæca there was considerable congestion of the vessels and several ecchymosed spots, which lesions no doubt gave rise to the paralysis.

I should be glad if you would give your opinion of the cause of the fracture of the two humeri. There is every reason to believe that the fracture did not occur after she fell on the road; and further, it appears that this was the only fall the mare had had. There was not the least abrasion of the skin, or the slightest external injury to be discovered; indeed, not a hair seemed turned the wrong way. The man's statement, to say the least of it, is ambiguous, and furnishes no satisfactory explanation. The mare was leaped through the day; indeed, in the morning she was taken into a ploughed field and galloped round it, and twice put at the fence. The first time she refused, but the second time she took it. I may remark that she was turned in a circle of very limited circumference, the ground being both deep and soft. Would it be possible for the mischief then to be inflicted, and for the extremities of the fractured bones to remain in apposition until the latter part of the day, when from some ill-understood cause displacement took place? The horsebreaker led her some distance previous to her falling, and he remarked that she reeled like a drunken man.

REMARKS ON THE ABOVE CASE BY PROFESSOR VARNELL.

The immediate causes of fracture are, as a rule, easy to determine, as are those also which *predispose* bones to such a lesion; but in this instance recorded by Mr. Peech neither the one nor the other seems easy of explanation. Even the time when the fracture occurred is not positively known.

The filly is described as being three years old, but the

general appearance of the bones would rather indicate that she was not quite so old. At this youthful period bones are not so susceptible of being fractured as they are later in life, unless predisposed by disease. Judging, however, from those sent there does not appear to be any diseased condition of the osseous tissue. Mr. Peech remarks in his communication "that the case is exceedingly unusual," with which observation I fully concur, and for this very reason it appears to me that an attempt should be made to explain the causes — predisposing and exciting — which produced the fracture. It is said that on the *fifth* of February, the horse-breaker found the mare to be slightly *ungovernable*, which induced him to use rather harsh means for the purpose of subduing her. It is not unlikely that he may have carried these means to an injudicious extent, whereby her health was interfered with. That such was the case we may infer from the remark of the bailiff—namely, that on this same evening she refused her food. Notwithstanding this she was taken out again on the following day, and it appears that the breaker was not very judicious in his treatment of her on this occasion, for he galloped her over ploughed fields, and forced her to take numerous leaps. These she at first refused to take, being perhaps conscious of her inability to perform the task, and which, from her being ill, we may suppose really was the case. The appeal made, however, to her merciless rider, in nature's dumb language, was not interpreted by him, for she was still urged on.

The poor mare, exhausted from illness, and the undue exertion she had been made to undergo, was now so prostrated that she could scarcely walk, and eventually, as we learn, she fell on the road. Under these circumstances it does not require much reflection, at least I think not, to understand how the ligamentous tissue of the vertebræ, and, in the same region of the back, the spinal cord and its membranes, became injured in the way they were found to be by Mr. Peech. Expenditure of nervous force, from which would arise diminished muscular contractility, may be looked upon as the predisposing cause of these lesions, while the severe exertion, added to the weight she had to carry, must be considered as their immediate or determining cause.

In this exhausted, half-paralysed condition, we can in our imagination follow the poor creature upon the road on her way home, being still ridden by the breaker, excepting for a very short distance before she fell. It is questionable whether he became conscious of the mare's inability to carry him, or whether he merely consulted his own safety, for he remarked

that "she reeled like a drunken man." Mr. Peech suggests that the fractures of the *humeri* might possibly have taken place previously to her falling on the road—she had had no other fall during the day—and that the ends of the bones remained in apposition until she fell on her way home.

I can only think that such a thing may be barely possible. To my mind it certainly is not very probable. If the fractures occurred otherwise than by concussive force, they must have been produced by muscular contraction, which, for two reasons, is not likely to have been the case in this instance. *Firstly,* because it is unusual for long bones to be broken from such causes; and *secondly,* if such should take place, displacement of the fractured bones is almost certain to occur at the time. The situation of the fractures, and their being comminuted, would also suggest the idea of their being produced by external violence. This opinion is supported by the statement of Mr. Peech, who says that he found "shattered muscle and several small pieces of bone." And further, the fact that both bones were fractured as nearly as possible at the same place, viz., at the lower part of their upper fourth, leads me to the conclusion that muscular contraction was not the cause. Rather, indeed, I should say, that the lesion depended *indirectly* upon the want of it.

The breaker admits that the mare fell on the hard road, although he does not explain the nature of her fall. Nevertheless, in the absence of more direct evidence, I am disposed to take the following view of this unusual case. I can picture to myself this poor mare, staggering along the road, the muscles of her hind parts being paralysed, and those of the fore extremities partially so from extreme exhaustion. Under such circumstances the muscles would be unable to move the passive organs of locomotion (the bones) with a proper degree of precision, and her movements, therefore, would of necessity be very defective, or, to use a common phrase, her legs would be "all abroad." In this condition, should she trip against a stone or other obstacle in the road, she would be almost certain to fall, and most likely would do so head foremost. I believe she must have fallen in this manner, and that the "points" of her shoulders came in contact with the hard road with a force sufficient to produce the fractures in question.

My principal reason for making these few remarks on this important case is, that there may be some members of our profession who have scarcely taken into consideration the influence that exhausted muscular power has in the production of sprain to ligaments or tendons, and even a fracture

of bone. Unconscious movements have long been recognised as tending to these lesions, which in effect would be pretty much the same as paralysis of the active organ of locomotion.

It would be well for the owners, especially of race-horses and hunters, and, indeed, of every other class of horse, if these facts were well understood and acted upon. Much pain and suffering would be obviated, as would also many a "break down," as it is termed. The roadster, likewise, in many instances, might be saved from a broken knee, and his rider, perhaps, from a severe injury.

Facts and Observations.

NERVES OF THE LIVER.—We see from the 'Proceedings of the Royal Society' that Dr. Lee has demonstrated that all the arteries—even the most minute—which ramify in the liver, are accompanied by nerves which take their origin from ganglia round the root of the hepatic artery, and which are intimately connected with, or form part of, the semi-lunar ganglion of the great sympathetic.

PLASTICITY OF BLOOD-CORPUSCLES. — Dr. Sharpey says:—"The plasticity of the blood-corpuscle is unrivalled by any other physical body. It will assume all sorts of protean shapes under the slightest influences. Elongating to a mere thread, it will pass through a narrow chink; it will wrap itself round an acute projecting angle, or protrude feelers and tails under the influence of currents. In its natural state it possesses sufficient elasticity to resume its original shape on the cessation of the modifying influences; but when gum or gelatine has been added, or when the plasma has been permitted to thicken spontaneously, the corpuscle retains any form it may have assumed till again altered by fresh influence."—*Proceedings of the Royal Society*, No. 52.

M. FLOURENS ON WOUNDS OF THE BRAIN. — The *Comptes Rendus* contains an account of experiments and observations by this distinguished surgeon, showing that wounds of the brain are easily cured. He cites several instances of human beings who have recovered from injuries involving loss of a portion of their brains, and adverts to his own proceedings in introducing leaden balls into the brains of rabbits and dogs. He made a hole in the skull with a

trepan, cut through the *dura mater*, and made a slight incision into the brain itself, in which he placed the ball, which gradually sank into the cerebral substance, making a kind of fistula that cicatrized. If the ball was not too big, the whole thickness of the cerebrum or cerebellum might be traversed without being accompanied or followed by any bad symptom or disturbance of functions. He states that, in 1822, he removed one lobe from the brain of various animals, who recovered perfectly, and only lost the sight of the opposite side; and he adds, "but the most remarkable thing was when I removed the whole cerebrum, or both lobes. The animal deprived of his brain survived more than a year, but he had lost all his senses and intelligence, and was reduced to an automaton." In another instance he took away all the cerebellum, and this creature lived a year. It never regained regularity of movements. It was reduced to the condition of a drunken man.

Distribution of Nerves.—In a paper communicated to the Royal Society Mr. Lionel Beale states :—"The nerves distributed to the voluntary muscles of the frog do not terminate in free ends, but there is reason for believing that complete nervous circuits exist. In all cases the fibres resulting from the division of the ordinary nerve fibres are so fine that many cannot be seen with a less magnifying power than 1000 diameters, and there is evidence of the existence of fibres which could only be demonstrated by employing a much higher magnifying power. It is by these very fine fibres alone, and their nuclei, that the tissues are influenced. The ordinary nerve fibres are only the cords which connect this extensive peripheral system." The author finds the same arrangements in the nerves of a man and the higher mammals, and also in the invertebrata. He employs a highly refractive fluid, such as syrup or glycerine, in these investigations."—*Proc. Royal Soc.*, No. 50.

A New Dialysing Medium. — M. Ern. Guignet has experienced some difficulty in the employment of parchment paper as a dialysing medium in certain cases, those in which it is acted on by the solutions. He appears to entertain some doubts of the truth of Professor Graham's proposition, that the parchment paper is actively concerned in the result by virtue of its colloidal property of becoming hydrated, and has sought to obtain some other substance which should admit of more general application. The medium which he recommends is *porous or unglazed earthenware*, such as is used in the

construction of porous cells for batteries; in fact, he seems to have used battery cells in some of his experiments. He states that with the employment of this medium, he has obtained all the important results described by Professor Graham, together with several which it would have been impossible to realize with parchment paper. The following are some of his experiments, which are interesting and suggestive, although not sufficiently numerous or precise to be conclusive:—A porous vessel filled with pure water was placed in a solution containing gum and sugar; at the end of twenty-four hours a great part of the sugar had traversed the porous vessel and passed into the water, but not a trace of the gum.

Caramel and bichromate of potash were in a similar manner rapidly separated; the salt passing through the porous vessel into the pure water, and leaving the caramel behind. A drop of the mixed solution allowed to fall upon the porous porcelain, gave a brown spot, surrounded by a yellow circle of bichromate, which the author considers evidence of the greater diffusibility of the salt.

A porous vessel of pure water was placed in an ammoniacupric solution of cotton; the water became blue, while the cotton remained in the outer liquid.

Experiments were also made to replace water by other liquids, such as bisulphide of carbon, and essence of turpentine. Iodine, sulphur, and naphthaline pass through porous earthenware with very different degrees of rapidity, when dissolved in bisulphide of carbon, the first being much behind the others.

Mummy Wheat.—The *Presse Scientifique des Deux Mondes* contains a description of a series of experiments made in Egypt by Figari-Bey on the wheat found in the ancient sepulchres of that country. A long dispute occurred a few years ago, as to what truth there might be in the popular belief, according to which this ancient wheat will not only germinate after the lapse of three thousand years, but produce ears of extraordinary size and beauty. The question was left undecided; but Figari-Bey's paper, addressed to the Egyptian Institute at Alexandria, contains some facts which appear much in favour of a negative solution. One kind of wheat which Figari-Bey employed for his experiments had been found in Upper Egypt, at the bottom of a tomb at Medinet-Aboo, by M. Schnepp, secretary to the Egyptian Institute. There were were two varieties of it, both pertaining to those still cultivated in Egypt. The form of the grains had not changed; but their colour, both within and without, had become reddish, as if they had been exposed to smoke. The specific

weight was also the same — viz., twenty-five grains to a gramme. On being ground they yield a good deal of flour, but are harder than common wheat, and not very friable; the colour of the flour is somewhat lighter than that of the outer envelope. Its taste is bitter and bituminous; and when thrown into the fire, it emits a slight but pungent smell. On being sown in moist ground, under the usual pressure of the atmosphere, and at a temperature of 25 degrees (Reaumur), the grains became soft, and swelled a little during the first fonr days; on the seventh day their tumefaction became more apparent, with an appearance of maceration and decomposition; and on the ninth day this decomposition was complete. No trace of germination could be discovered during all this time. Figari-Bey obtained similar negative results from grains of wheat found in other sepulchres, and also on barley proceeding from the same source; so that there is every reason to believe that the ears hitherto ostensibly obtained from mummy wheat proceed from grain accidentally contained in the mould into which the former was sown.

Veterinary Quackery.—A report recently issued by the council of the Royal College of Veterinary Surgeons gives the number of members of the profession practising in the United Kingdom as 914, while the number of those who assume the title of "veterinary surgeon," without having any claim to it, are not less than 1244, and those practising as veterinary surgeons, and calling themselves "farriers," are 1189. In Yorkshire there are 68 licensed members of the profession, and 245 persons who practise without having the diploma of the college, and without having received any education fitting them for the art of veterinary medicine and surgery, such persons having been either stud grooms, farriers in the army, gardeners, or, perhaps, at present keeping forges for shoeing horses, or druggists' shops. In Sheffield and the immediate neighbourhood there are twenty-four persons who professedly obtain a living as "veterinary surgeons," and are of the class before named.—*Sheffield and Rotherham Independent.*

Hydrophobia.—During a series of experiments made by Professor Renault, and communicated to the Academy of Sciences, respecting the period required for the development of symptoms of hydrophobia, he caused 130 dogs to be either bitten by mad dogs, or inoculated with their saliva. Of these, 63 showed no symptoms during a period of four months, and were therefore considered free. Of the remain-

ing 68, 31 became mad after the 40th day; 23 after the 45th; 16 after the 50th; 14 after the 55th; 12 after the 60th; 8 after the 65th; 7 after the 70th; 3 after the 80th, and 1 upon the 118th.

THE ETIOLOGY OF PURULENT INFECTION.—M. Flourens, in a note presented to the Academy of Sciences, gives an account of some experiments he has recently performed. He took some drops of pus from the dura mater of a dog and applied them to the perfectly healthy pleura of another dog. The dog died at the end of thirty-six hours, and a double purulent pleurisy was found to exist, the pleura being filled with pus, while no other viscus contained it. Pus was also applied to the abdominal muscles of a perfectly healthy dog. It died in four days, an enormous infiltration of pus having taken place amongst the different muscles of the abdomen. Moreover, pus transported from the dura mater to the pleura of the same animal caused death on the fifth day, the left pleural cavity being filled with pus.

VIVISECTION.—It will be remembered by our readers that two years ago a deputation of the Royal Society for the Prevention of Cruelty to Animals, headed by Samuel Gurney, Esq., M.P., visited Paris and had an interview with the Emperor of the French, with a view to the discontinuance of the horrible practice of cutting up animals alive in the French veterinary and anatomical schools. The Rev. Prebendary Jackson, of Stoke Newington, who formed one of the original deputation, has just been to Paris again in order to learn what has been the result of the benevolent efforts of the society. It will be gratifying to the friends of humanity to know that whereas before the deputation went no limit or check was placed upon the practice of cutting up animals alive in France, but now all private and unauthorised vivisections are put a stop to by an ordinance of police. M. Magne, who has written strongly against the abuse of vivisection, has been appointed by the Imperial Government director of the college at Alfort, which is a pledge that the cruelties hitherto carried on there will cease; while at Lyons it has been determined that no incision shall be made in any animal till the organs of sensation have been thoroughly destroyed. These important results will no doubt greatly encourage the society in pursuing its efforts abroad in the interest of religion, humanity, and civilisation.

THE VETERINARIAN, MAY 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

THE SCIENCES IN CONNECTION WITH VETERINARY MEDICINE.

It may be that some persons will charge us with having high aims and being very ambitious. Nor are we very solicitous to clear ourselves from the imputation; yea, rather, we would rather at once plead guilty to the charge, having always held a high opinion as to the usefulness of the veterinary profession, while we as sincerely believe that we can only fulfil our duty as members thereof by endeavouring to place its practice on a scientific basis; since it is only in proportion as the superstructure is raised upon this that we shall really progress.

Not long since we dwelt upon the connection that exists between medicine and the physical sciences generally; claiming our right to a position among them, second only to that of the sister science. This subject we shall now revert to, in agreement with a promise then made, as it is by no means exhausted. Indeed the more we reflect upon it, the more we are convinced that it is alone by an association of this kind that we can maintain our status in the social scale.

In following up this subject, we shall not hesitate to quote from others with whom our opinions may be in accord, expatiating upon and applying their statements, for by so doing our own will become strengthened; or it may be that we shall have to combat the views that others take. Nor would we lose sight of the practical in the merely æsthetical; nevertheless we are quite sure that unless we are governed by principles, our practice can never be sound or correct. It is true empiricism may sometimes succeed, because it is bold and has nothing to lose; still it is only at best haphazard work, and gives no solid satisfaction to the mind; nor can it ever bear the test of reason, as it can assign no "why and wherefore" for its doings.

It has been truly said of the medical man that—

"He alone can become a sound and successful practitioner who has been a diligent student of those sciences which investigate our structure and functions in their healthy and natural state; namely, anatomy, chemistry, and physiology. Each should learn as much of them as he could, bearing always in mind the great object for which they are studied, and never neglecting the purpose to which they were to be applied. It should be remembered, too, that medicine and surgery were founded and raised upon the natural sciences. All that they were beyond mere empirical arts they owed to their dependence upon and their association with these. It would be difficult to find a man in our profession who had attained to any great eminence in the practice of his profession, or who by his writings and precepts had advanced our knowledge of disease or our power over it, who did not lay the foundation of his success on the distinction which he earned by his labours in the natural sciences."

It might perhaps by some be thought that from ours being a subordinate art it does not call for the same aids as the higher division demands. This is a fallacy; the reasons for which have been already assigned.

It is true the lower animals, in a certain sense, cannot be compared with man; and yet there is another sense in which a comparison may be allowed. The duty of both professions is, however, the same.

Their study is that of truth, the glorious truth of nature, as revealed in the Creation; their aim beneficence, to allay misery, and to assuage suffering. Viewed as an educational agent—as a means for cultivating the highest and best faculties with which a man is endowed—the study of medicine and the collateral sciences is unrivalled in the whole range of human knowledge.

Then, again, it may without much fear of contradiction be asserted that the powers of observation as to the nature of many diseases are more frequently called upon by the practitioner of veterinary medicine than those of the human practitioner, since the like facilities are not afforded him of diagnosing disease, and he is altogether unable to avail himself of the many advantages derivable from instituting those pertinent inquiries which are so necessary to the ascertaining

of that which is occult. All this calls for mental culture, and involves the absolute necessity of study to ensure success. A person rightly instructed will refrain from adopting what are designated the means of cure, until he sees clearly in his mind the consequences that in all probability will be the result. It is true he may not be able, at all times, confidently to predict, yet from his previous experience and a knowledge of the governing laws, he will always have just grounds to anticipate what will take place. Now, we hold that nothing can be more conducive to this desirable end than a familiarity with the collateral sciences—those which more immediately come to the aid of medicine. They not only strengthen the mind by enabling it to reason upon "cause and effect," but so train it, that the favorable and unfavorable, the probable and improbable, are deliberately weighed before a step is taken, or an act committed that may be irrevocable.

Thus is shown the advantages to be derived from a study of the sciences as applied to medicine, and the superiority that must ever be possessed by the man of education over the mere charlatan or pretender. Fortunately at the present day the latter finds no place in the estimation of the discerning and the wise, nevertheless there are those who do occasionally resort to him. Such we warn, as success can at best be only the result of chance. It would be easy to enlarge here, but we think enough has been already advanced to prove our statement. The student of medicine must be emphatically a student of science, and this renders medicine a life-long study, the practitioner having ever to be learning. His vocation calls for an insight into the organic kingdom of nature, vegetable as well as animal, and a familiarity with the inorganic elements of the globe likewise, and the laws that govern even the universe itself. Thus his knowledge becomes based on science, the best and firmest of all resting-places, because it is truth. It has been well said—

"Many are apt to forget this from the very constancy of its use, just as in the daily use of sight and hearing they cease to think of the inestimable value of those senses. The medical practitioner is different from other men in seeing

into and through the physical world at every point. There is to him nothing of mere surface, as in the case of men upon whom scientific knowledge has not dawned. The strength and the weakness of man come alike under his observation. This is a noble part of the destiny of medicine. It is not national, but cosmopolitan in its scope. The distinguishing pride and charactristic of medicine in our own day is, that, while retailing all that it has derived from ages and experience, the profession has now allied itself with science to a far greater extent than can be said of any other calling. Yet we are still, as it were, gathering sands by the sea-shore, but a vast amount of scientific knowledge has been garnered, so that it can never again be lost. Every age produces its ideas, but even in those oscillations there is progress, and in eaeh department of art solid truths are established in each succeeding generation upon the surest foundations."

Although we have written thus much, we feel that so far from having exhausted the subject, we have only just entered on its confines. Ideas cluster around each other as we give the rein to thought, so that it is probable, in the absence of more pressing matter, we may venture upon its consideration again.

SPECTRUM ANALYSIS.

We have before, and more than once, adverted to this beautiful mode of analysis. As in all other discoveries, some of its advocates seem to have been a little too hasty in their conclusions. Late researches, it is stated, go to show that Messrs. Bünsen and Kirchhoff generalised too soon, and upon insufficient experiments, when they announced that certain metals were demonstrably present in the sun's atmosphere. M. Morren, in a letter to the editor of *Cosmos*, asserts that the more conspicuous negative, or dark, bands in the solar spectrum do not correspond so perfectly as was at first supposed to the coloured bands seen in the spectra of certain metals.

For instance, it has been asserted that the bright red band of the potassium spectrum coincided exactly with the conspicuous dark band known as "A" in the solar spectrum; but M. Morren finds them to deviate by fully a third of a degree. It is also found that the spectra of certain metals become progressively enriched with coloured bands as the temperature of their vapour is raised. The spectrum of iron, as given by a powerful battery of 65 Bünsen's elements, contained so many lines that they were counted with difficulty; whereas the iron spectrum, as shown in the flame of a feebler battery, contains comparatively few lines. The yellow band of the sodium spectrum is found to be developed in the spectra of mercury, and of several other metals, at a very high temperature. The coincidence of the solar band "D" with the yellow band of the sodium spectrum cannot therefore now be regarded as proof of the presence of sodium in the sun's atmosphere. The temperature of the sun is vastly higher than any temperature yet obtained by artificial means on the earth; and who can tell from the lines of metallic spectra as exhibited by artificial heat, what modifications they may undergo in the intense incandescence of the solar atmosphere? Dr. Frankland, in a recent experiment upon the lithium spectrum, was astonished by the appearance of a splendid blue band, such as was supposed to be peculiar to strontium. This startling blue line was found to have been developed by the high temperature of the flame used. With an ordinary Bünsen's burner, no such lines appeared, but only a familiar lithium spectrum. Dr. Frankland seems to have been led to this solution of the mystery by the knowledge that lithium burns in the air with a crimson light; but that, when plunged into oxygen, where the combustion is far more intense, its flame is bluish white. These discoveries, although tending to impugn early speculations, will probably help us at last to some definite and reliable conclusions in the department of solar and stellar chemistry.

Extracts from British and Foreign Journals.

ON LIQUID RENNET, OR RENNET WINE.

By William Procter, Junr.

It has long been known that the mucous coat of the stomach of the calf, pig, and other young mammals possesses the power of coagulating the casein of milk, as in the making of cheese; but it is only of later years that an attempt has been made to introduce a solution of *rennet*, as this substance is called, into pharmacy with a view to the *cuisine*, as well as for use in medicine. For several years *pepsin*, the proximate principle to which this coagulating power is attributed in an impure state, has been an article of commerce with a view to medicinal use in diabetes and other diseases; that prepared by M. Boudalt, of Paris, having acquired some celebrity.

In several pharmaceutical works, recipes for making "Liquid Rennet" may be found, but these vary much, both as regards the strength of the solution and the preservative ingredients. The dried stomach of the calf prepared by salting it, and stretching it over a bent hoop to facilitate its desiccation, is familiarly known in the markets under the name of rennet, and most housekeepers prefer to keep and use it in this state, or by cutting this up and macerating it in wine; but for those who aim at manufacturing the solution for commerce, it is preferable to employ the recent membranes, both on account of economy and efficiency.

Pepsin has never been isolated in a state of purity; it seems to be secreted by glands located in the mucous coat of the stomach, and, in connection with hydrochloric, and perhaps lactic acid, constitutes the active portion of what is called the *gastric juice*, concerned in the process of digestion. It is to this mucous coat of the organ, therefore, that attention must be given; and inasmuch as the rennet tends to exercise its digestive power on the membrane itself, there is a propriety in using mechanical means to effect the rupture of the mucous coating to facilitate the extraction of the active principle without cutting it up, by malaxating them in water with salt, to which weak alcohol or wine is subsequently added. Some prefer at once to separate by the knife the mucous coat with the glands, but generally the whole organ is cut up, mixed with salt and water, and well malaxated at intervals,

for a time varying from twenty-four hours to two months. Soubeiran gives the following recipe as that of Wislin:—He takes of the stomach of young calves *ten* parts; chloride of sodium *three* parts; alcohol, of 80 per cent., *one* part; and water *sixteen* parts. The stomachs are slit with a scissors so as to expose the interior, they having been previously gently rinsed to remove foreign parts adherent; they are then malaxated with the dry salt thoroughly, and left in a cool place until the cheesy odour at first apparent becomes replaced by that of rennet, which requires one or two months. At this period it is macerated in the water for a short time, the alcohol is added, and the liquid portion strained off and filtered for use.

Dohvault, in his 'L'Officine,' gives the following recipe:—"Take of recent rennet 375 parts; common salt 60 parts; alcohol of 75 per cent. 60 parts; white wine 1000 parts. Digest the whole for a month and filter. A teaspoonful is sufficient for a quart of milk."

Some believe that the rennet during the protracted process of curing by salt is rendered more active, and that it is necessary to delay the final process of solution until after that operation; but this is, doubtless, incorrect, in fact, though it may seem to be true, as the truth lies more in the mechanical effect of salting in breaking or causing the shrinking of the tissue, and in altering the resistant or pulpy condition of the mucus, than in any development of increased power; and hence there appears to be no good reason why it should be protracted beyond a few days, unless with the intention of curing the rennets for future use. After several trials the following is offered as a practicable formula for making

Liquid Rennet, or Rennet Wine.

Take of fresh rennets (about three) twenty-four troy ounces,

Chloride of sodium,	three troy ounces,
Alcohol,	six fluid ounces,
White wine,	sixteen fluid ounces,
Water,	a sufficient quantity.

Having turned the rennets inside out, and washed them by a gentle stream of water for a few moments without any friction, and having placed them in a shallow dish, sprinkle half of the salt over them, and with the hands malaxate them vigorously for fifteen minutes, aiming to disengage the mucous secretion, then add a pint of water, again malaxate,

and after standing several hours strain off the thick mucilaginous liquid by pressure in a loose-textured cotton cloth. Return the rennets to the dish, sprinkle on the remainder of the salt, again repeat the process of malaxation, maceration, and expression. Let these operations be repeated a third time, or until the fluid obtained measures forty-two fluid ounces; then, having mixed the alcohol with the wine, add them to the expressed liquid, and agitate the mixture several times at intervals of an hour or two; after which allow it to stand till the mucus which is precipitated by the alcoholic addition subsides, when the nearly clear solution of rennet may be drawn off with a syphon, and filtered for use. The wine may be substituted by a mixture of one part of alcohol and three parts of water. A tablespoonful of this solution readily coagulates a quart of milk to a firm curd, if added after gently warming the milk (to about 100° F.), stirring it well for a moment, and allowing it to stand undisturbed for half an hour or an hour. *Cold custard* is made in the same manner by previously adding a tablespoonful or more of sugar, and some vanilla or other flavouring before adding the rennet. When liquid rennet is employed for medicinal purposes it is preferable to make it with wine, as being more acceptable to the stomach.—*Am. Journ. Pharmacy.*

OXALIC ACID IN PERUVIAN GUANO.

By M. Liebig.

Almost all the guano now so extensively used in Europe is obtained from the New World. This natural manure, composed essentially of urate and oxalate of ammonia, phosphate and oxalate of lime, and a peculiar base, guanine, is, it is well known, the produce of certain sea birds.

M. Liebig, whose works have rendered so much service to agriculture, has recently published a memoir in the *Annalen der Chemie und Pharmacie,* vol. cxix. p. 11, 1861, which to us appears to throw great light on the cause of the fertilising properties of guano, and on the means of appreciating them by the aid of chemical analysis.

The manifest action of Peruvian guano on the soil has not hitherto, he says, been satisfactorily explained. The good effects of this manure are generally attributed to the large proportion of nitrogenized matters which it contains,—matters consisting chiefly of ammoniacal salts and uric acid. Many observations, however, have proved that a field manured

with guano yielded an abundant crop, while the addition, to a part of the same soil, at the same time, and for the same crop, of a quantity of ammoniacal salts corresponding exactly, in richness with nitrogen, to the guano employed, had scarcely any effect on the crop.

If, in the first instance, guano owes its fertilising properties to the nitrogen it contains, it is difficult to comprehend why, in the second instance, the same quantity of nitrogen, added to the soil in its most active form, should have no influence on the crop. The cause of the energetic action of guano must then be sought in its other constituents. If from these we except uric acid, the influence of which on vegetation is almost completely unknown, there remain only earthy phosphates and alkalies, which, existing simultaneously with ammoniacal salts, might communicate to guano its active properties.

According to M. Liebig, various reasons prevent the acceptance of this conclusion. Phosphate of lime is, with ammoniacal salts, the predominating element of Peruvian guano, which contains 32 to 36 per cent. of it. A quantity of phosphate (powdered bones), four, six, or even eight times larger than that contained in guano, is very far from producing the effect of the natural manure; its fertilising action is frequently increased by the addition of ammoniacal salts, but the results fall far short of those produced by guano containing phosphates in the same proportion. The principal difference to be remarked between these two manures consists in the length of time each takes to manifest its action,—a point which has hitherto remained unexplained. The influence of guano is apparent the first year, often even after a few weeks, and goes on diminishing year by year; the powdered bones, on the contrary, act feebly during the first season, but afterwards their effect increases.

These facts once established, we will adduce M. Liebig's experiments, which tend to prove that guano owes its rapid action to the presence of oxalic acid.

Various kinds of guano contain very varying quantities of oxalic acid,—another proof that the composition of guano is not constant. Certain analysis, not indeed sufficiently numerous to lead to a positive conclusion, seem to prove that the quantity of oxalic acid contained in a sample of guano is in inverse proportion to the weight of uric acid it contains; that is to say, that the guanos rich in uric acid are generally poor in oxalic acid.

If Peruvian guano is moistened with either cold or boiling water, and filtered immediately after, the liquid furnishes, by

evaporation, abundant crystals of neutral oxalate of ammonia, the mother-water containing a certain quantity of phosphate and sulphate of ammonia.

If guano is moistened with cold water and left alone for some time, the results are very different. The proportion of oxalic acid contained in the solution goes on diminishing, and the filtered liquid contains phosphoric instead of oxalic acid. After remaining in contact for twenty-four hours, the quantity of phosphoric acid becomes so considerable that the filtered liquid, boiled with sulphate of magnesia, yields, without the addition of ammonia, an abundant crystalline precipitate of phosphate of magnesia and ammonio-magnesian phosphate.

It is easy to explain why phosphoric acid, under these circumstances, should become soluble; in fact, it is evident that the oxalate of ammonia, dissolved by the addition of water to the guano, is gradually transformed in presence of phosphate of lime, and that the result of the reciprocal action of these two salts is insoluble oxalate of lime and soluble phosphate of ammonia.

It will be seen from this that the phosphoric acid of guano is not dissolved, because the manure contains at the same time oxalic acid; for by distributing all the fixed bases of the guano between phosphoric acid, sulphuric acid, and chlorine, there remain for the phosphoric acid only two equivalents of lime and magnesia, forming with it a salt partially soluble in neutral salts of ammonia. The presence of oxalic in the aqueous solution of guano is a sufficient reason for the absence of lime.

The following fact seems to contradict the explanation given above :—Recently-precipitated phosphate of lime, with two or three equivalents of base, is scarcely at all modified by long contact with oxalate of ammonia; traces only of phosphoric acid are found in solution. But it must be observed that guano always contains a body which facilitates decomposition, sulphate of ammonia. This salt renders the phosphate of lime partly soluble, but it does not pass into the solution in this form, the lime being immediately precipitated by the oxalic acid, the action of the sulphate of ammonia being prolonged, and the decomposition of the phosphate of lime goes on. By adding a small quantity of sulphate of ammonia or a few drops of hydrochlorate of the same base to a mixture of oxalate of ammonia and phosphate of lime, the phosphate is very rapidly changed into oxalate.

In guano moistened with water the transformation of oxalate of ammonia to the state of phosphate goes on rapidly

to a certain point, after which the action slackens, and the decomposition is incomplete even after eight days. A little oxalic acid always remains in the liquid, easily recognisable by the fact that the precipitate which it gives with a salt of lime does not entirely disappear in acetic acid. The persistence of the oxalic acid is perhaps due to the fact that the phosphate of lime, not yet decomposed, is masked in a thick coating of oxalate of lime, which considerably retards the action of the oxalate of ammonia.

By acidulating with sulphuric acid the water serving to moisten the guano, so as to render the mixture freely acid, the decomposition becomes so much accelerated that it is finished in a few hours. No trace of oxalic acid is then found in the liquid, but in its stead an equivalent quantity of phosphoric acid.

Acetic acid and water charged with carbonic acid act on guano in the same manner as sulphuric acid.

M. Liebig has obtained the following results from a specimen of guano remarkable for the small quantity of oxalic acid and the large quantity of uric acid (18 per cent.) it contained. Besides water, potash, soda, and ammonia, he found in the aqueous extract of 100 parts of guano—

Phosphoric acid	2·857
Oxalic acid	4·202
Sulphuric acid	3·371

After having effected the transformation of the phosphate of lime by a little sulphuric acid, M. Liebig found that 4·2 per cent. of oxalic acid contained in this guano had been replaced by 3 per cent. of phosphoric acid; that is to say, that by this method about half of the whole of the phosphoric acid of the guano had become soluble.

In other kinds of guano the same method has rendered soluble a weight of phosphoric acid corresponding to 10 or 12 per cent. of the weight of the guano; in other words, the whole of the phosphoric acid contained in the guano.

M. Liebig devotes the latter part of his memoir to examining the practical conclusions to be drawn from these facts. When, he says, a field manured with guano receives too little rain to moisten the manure mixed with the arable land, all conditions are united to favour the solution of a certain quantity of the phosphoric acid, combined with the lime, and, consequently, to increase the fertilising action of the ammonia. The guano then acts in the same manner as acid phosphate of lime.

Heavy and continuous rains, while washing the soil, disturb

this decomposition; and it is to be desired, for the interest of science, that agriculturists would give some attention to the influence of guano, under these various circumstances, on the fertilisation of the soil.

It is hardly necessary to remark that the action of guano can be made certain—at least, so far as it depends on the reaction of oxalic acid on phosphate of lime—by moistening the manure before using it with very diluted sulphuric acid, and then letting it stand for twenty-four hours. The moistened mass should have an acid reaction.

The addition of water, to increase its weight, is the most common falsification of guano; the greatest inconvenience arising from this fraud is, that it favours the decomposition above mentioned. The evaporation of ammonia proceeding from the phosphate of ammonia, formed under the influence of water, explains the loss of nitrogen observed in guano which has been kept for any length of time.

It is now evident that the agricultural value of guano has been but imperfectly appreciated, when the ammonia, phosphoric acid, and phosphate of lime which it contains, have been estimated without taking account of the oxalic acid, to which, as M. Liebig has shown, its fertilising action is chiefly due.

This account would be incomplete without a description of the simple process by which M. Liebig estimates the oxalic acid in guano. The following is an extract from his letter on the subject:—

"To estimate the oxalic acid, I boil the guano with nitric acid; I then wash it; afterwards I add hydrochloric acid to the residue, which dissolves the remaining oxalate of lime and phosphate, leaving the uric acid. I neutralize the acid liquid with ammonia, which precipitates the phosphate and oxalate; I then add acetic acid, which dissolves the phosphate of lime, and throw the oxalate on a filter, wash it," &c.

Guanos can thus, in a very little time, be tested before being used.—*Condensed from the Annalen der Chemie und Pharmacie*, cxix, 11.—*Chemical News*, May 17th, 1862.

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Clinique Vétérinaire, January, 1863.

ORIGIN OF COWPOX.

(*Continued from p.* 250.)

I am not affected by the two objections: 1st. That the lancet by which the cow was inoculated might have been used previously in a case of vaccination, and consequently have inoculated a remnant of the virus of cowpox by which it was tainted, at the same time as the matter taken from the mare was inoculated. 2nd. That the heifer was on the eve of contracting the cowpox spontaneously, it being in a state of incubation at the time when the inoculation with the matter taken from the mare was performed, and that consequently the appearance of the malady might only have been a coincidence of this incubation, I do not believe these objections serious. Concerning the latter, would it not be very strange that M. Lafosse should have precisely fallen in the selection for his experiment, on a cow having the cowpox in a state of incubation at the time he submitted her to the process of inoculation, and that in a district where the cowpox did not prevail at the time, does not habitually prevail, and is not known to have prevailed for a long time past; and that it should have been exactly at that period of its incubation, so that the time of its evolution in pustules should be equal to that which separates ordinarily that of the incubation of the cowpox from the pustules which are the consequence? And finally this coincidence is still more strange from the circumstance that the pustules of this spontaneous cowpox only appeared, as the report of M. Bousquet states, on the spots where the punctures were made for the inoculation. The objection about the lancet which might have been used, at a time more or less remote, for the purpose of vaccination is not more admissible; in the first place it was taken from the case of instruments of M. Lafosse who is a veterinary professor, and does not vaccinate. But I will go farther and suppose that the lancet had been used eight

or ten days before in a case of vaccination, and had not even been wiped after the operation, it would then have been unable to produce an eruption or the slightest manifestation of cowpox whatever, because the minimum quantity of virus which might have been preserved on its surface would have become perfectly desiccated. Now the result of a great number of experiments I have made with all the virulent matter I have been able to obtain, amongst others that of the variola in sheep, which has so great an analogy with the smallpox in man, that whichever way you may inoculate, even the most active when fresh, produce not the slightest effect, either general or local, when they are in a state of desiccation. The fact of M. Lafosse therefore preserves all the importance that has been attributed to it, and which is recognised in the report of M. Bousquet; to wit, that it is the inoculation of the matter from the mare of M. Corail which has produced the manifestation of cowpox in the heifer which had been subjected to this operation. But it has only that importance to a certain extent, and if we are allowed to presume, it does not prove that the malady by which this mare was affected, was the same as that which characterised the epizootic observed by M. Sarrans; neither does it prove that the malady of which this epizootic consisted if inoculated, would have produced the vaccine virus in the cow. As to the question whether the affection of the mare of M. Corail and that observed by M. Sarrans were really the affection known and designated by veterinary practitioners as grease (eaux au jambes), doubt is impossible; evidently it was not grease. From simple notes addressed to me by M. Lafosse, and before M. Leblanc went to Toulouse, I had expressed doubts in this respect, and announced them to the Academy at the sitting of the 26th of June, 1860. The details given since by our colleague in the report of the commission of Toulouse, the synoptic comparison transcribed from it in the report of M. Bousquet, by their symptomatic differences do not likewise allow of any doubt; I will however point out a difference no less important taken from the etiology: that is, it is rare that the grease, which is not contagious, has any other cause than the long-continued effect of the acrid mud and irritating wet of the streets on the skin of the legs. The proof of this is that in these large towns where a better system of paving and draining now exists; as, for instance, in Paris where the streets are now better paved and provided with lateral gutters instead of one only in the centre, in which the horses were obliged constantly to plunge, and also the frequent flushing of the streets which prevents the mud from accumu-

lating and, by diluting it greatly, deprives it of its acrimony; since that, grease, which was so common, has become comparatively rare; so much so, that veterinary practitioners who had from eighty to one hundred cases of grease in the year have hardly one now in the same space of time. At all events, I have never known this affection invested with an epizootic character, not even in the most filthy and ill-conditioned localities. The malady described by M. Sarrans had, however, all the characteristics of an epizootic, and it is credible that its spontaneous appearance was not caused by the acridity of the mud and the wet of the streets of Rieumes, in the spring of the year in the south of France, and that it should have attacked so many horses at the same time. Again, the malady of Toulouse, which by inoculation produced the cowpox, was not the grease, but this I repeat does not in any way detract from the merit or the interest of the experience of M. Lafosse, or from the fact which was the motive of it. That perhaps even an error in the diagnosis at the first superficial examination might have been committed by that distinguished practitioner, adds greatly to that interest; since the cause of the difference of the results obtained, to this day, by the divers physicians or veterinary practitioners who have from the time of Jenner inoculated the matter taken from the grease of horses could be explained. It would in fact be possible that the small number of experimenters who affirm having seen the vaccine or cowpox result under this manipulation, and before their eyes after the inoculation, either accidental or experimental, of the matter of grease, have had to do with a pustulous affection similar to that of Toulouse; while those who are in greater numbers have obtained no result from their inoculations having taken the real matter of grease, which was then of more frequent occurrence, for their experiments.

To add to the probability of this supposition these inoculations, which are given as efficacious in their result, were made in the country, where the causes of grease are in general wanting. While on the other hand, those experimenters who failed in obtaining similar results, the matter with which they inoculated was taken from horses affected with grease in large towns, where genuine grease always prevails more or less. In resuming, I may say that the fact of Toulouse, besides its own and real value, which I maintain it has, has another very important one, and that is, the publicity which it has acquired, and which will be greatly increased by this discussion. Veterinary practitioners will thereby know that there is a disease the seat of which is on

the lower parts of the legs of the horse, which has hitherto been confounded with grease, which, however, with careful examination might easily be distinguished from it; and it will further make them comprehend the necessity and importance of studying the diagnostic characters on every occasion, so as to ascertain with all possible authenticity the property they may possess of producing the vaccine by inoculation either in the cow or in children. One word more and I have finished. M. Bouley, a little while ago enumerated several diseases very different from each other which according to some experimenters had, when inoculated either in the cow or children, produced the vaccine. These were grease, cutaneous furuncle (Javart), and a gangrenous affection of the legs described by M. Herting of Berlin. Our colleague seems to accept these results as if they were well established facts, insomuch that he does not contest them. I say with M. Depaul that, in a matter of such importance, what I have heard on the reality and the scientific certitude of the results are neither sufficiently defined nor circumstantiated enough to edify me. I will further state that so great is the confusion on this question as to its origin, that, if we are to believe Careno, of Vienna, quoted by Bousquet in his report, and who was the translator in Latin of the English text of Jenner's work, M. Bouley might have added to his list and cited also another malady of the horse which according to some authors is likely when inoculated to produce the cowpox, viz., the canker that affects the frog and sole and sometimes the whole of the bearing structure of the foot of that animal. It is from this in fact, if the Latin translation of Careno is correct, that the illustrious author derived the origin of the cowpox, under the denomination of grease. This is the translation, "planta pedis inflammata tumet, unde materia peculiaris indalis profluit, quae in corpore humano morbum variolis ita similem excitat ut plane non dubitem variolas ipsas ab hac materiâ originem traxisse." If it is the fact that it was the fœtid secretion from the tumefication situated under the foot that Jenner considered as the affection from the inoculation of which was produced the vaccine, I can conceive no other affection to which the application could be made except to the affection designated canker. M. Depaul fears that he has not been understood in the last meeting, pressed as he was for time and obliged to pass rapidly over the subject, he therefore wishes to refer back to some points of his argument. There are two distinct phases in the history of the fact of Toulouse, as, first, it was believed that it was the grease which had been inoculated; afterwards it was no longer the

grease but a peculiar eruptive affection to which no name has been given. There is, therefore, an enormous error, and this is of great importance, inasmuch as it is an old opinion, which dates back to Jenner, that the cowpox had its origin from the grease which affects the heels of the horse; but this view of Jenner is theoretical and not founded on experience, because the experiments he made had no such results. M. Bousquet in reporting in his treatise on vaccine the opinions of Jenner at first combated them, but the fact of Chartres and afterwards the other of Toulouse have convinced and brought him back to that opinion. I must observe that there is no similarity between the case of Chartres and that of Toulouse, and to convince you of this the history of Brissat needs only a more careful examination; he was a shoeing smith, had been vaccinated, and presented himself to M. Pictrat, with seven or eight pustules on the back of his hand. The fact that he had shod a horse some time before with greasy heels, led to the conclusion that he had been inoculated by it, hence the pustules; it being further demonstrated that the pustules were the cowpox, by re-inoculation of the virus. But it is remarkable that between the shoeing of this horse and the appearance of the pustules, not less than twenty-four days had elapsed, an unknown period of duration of incubation in cases of vaccination. I emphatically deny that the shoeing of the greasy heeled horse was the real cause of the pustules which were developed on the hand of Brissat. For my part I think that Brissat might have been affected with variola. To this it might be objected that he had no pustules on any part of his body except his hands, but it has not been shown that he has been examined, and therefore there is no proof that he might not have had some on other parts of his body. The fact quoted by Sacco, which has been invoked in this discussion, and by which we are led to trace the origin of the vaccine to furuncle (Juvart cutané) which has been divided into four distinct species, one of which is supposed to be epizootic, this one alone having the property of producing the vaccine; here also the natural supposition would apply, by supposing that the coachman, the subject of the observation, had variola like Brissat. As to the fact of Toulouse, it has a very different signification from that of Chartres, and also different from what has been attributed to it at first. We all know how M. Leblanc discovered the error which had been committed. An eruptive epizootic disease prevailed at the time amongst the horses, which unfortunately was not properly characterised, but which from every appearance had a perfect analogy to variola ovina (sheep-pox). The deci-

sive experiments on this subject by M. Sacco, who produced the vaccine in children by inoculating them with the virus of the *Claveau* (variola ovina). In summing up I believe, contrary to the opinion of M. Bousquet, in the identity of the origin and nature of the vaccine and that of the variola. The vaccine in my opinion is nothing more than the variola inoculated in animals, producing either the cowpox or sheeppox in them according to their species, and from them retransmitted to the human subject. It is to be presumed that the eruption observed on the mare which served for the experiment of Toulouse, was an affection of this kind. All maladies capable of being inoculated from one species to another are fundamentally the same malady as variola, and in my opinion grease has nothing in common with vaccine. M. Renault, though agreeing in opinion with M. Depaul finds that he has somewhat deviated from the discussion in its principal object; he reminds him that when he communicated to the academy the experiments of M. Lafosse two years ago, he then said that he did not believe that it was the grease in this leg. The gist of the whole question all tends now, as you see, to confirm this opinion, but we must nevertheless recognise in the experiments of M. Lafosse an important fact. M. Huzard is also of the same opinion as M. Depaul, that it is impossible to attribute the origin of vaccine to maladies so different as the furuncle or the grease. He thinks that the horses affected with grease, and who according to the observations which have been cited have transmitted the vaccine to the human subject, must have been at some time affected with another malady, probably one of an eruptive character. M. Depaul asked me in the last sitting if the observations cited were those of Jenner himself, or whether they were by a third party. It has been insinuated that the facts which I adduced were only stable talk. In order to economise the time of the members of the academy at the last sitting, I only ran over the heads of the chapters of Jenner's book, indicating in a summary manner their contents; but as I am induced by the incredulity of M. Depaul to give greater precision to the proofs, I beg leave of the academy to quote the text of several passages from the translation of Jenner's book, which I had only indicated before. M. Depaul persists in his opinion; he finds nothing in the quotations made by M. Bouley, which he knew were already demonstrated, and that Jenner himself had seen the facts he mentions.

(*To be continued.*)

Review.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Air and Water, their Impurities and Purification. By Henry Bollmann Condy. London: John W. Davies, 54, Princes Street, Leicester Square; 1862.

(*Second Notice.*)

In a previous number we reviewed a pamphlet by Mr. Condy on the above subject, extracting somewhat largely from it, and promising a second consideration of it. This we did because we found much, as we thought, that was interesting and important therein commented on. We then remarked that the agent advocated by him as a corrective owed its action to oxygen in its ozonic state. "Ozone acts on all organized substances, whatever their condition; but its action on organic matter in the fresh or recent state is comparatively feeble; when decomposition, however, has commenced, it manifests the utmost avidity for combination with the more oxidizable products which have been or are in the habit of being formed. . . . . Ozone is the great scavenging principle of Nature. So opposed is it to all foul and effete products of living organisms, that its presence in any given locality may be taken as a proof of the absence of those impurities which render the air unfit for use, and consequently as sufficient indication of the state of the atmosphere, with reference to its fitness for the purposes of respiration and the maintenance of health."

Ozone is the disinfectant *par excellence*, and Schönbein, by experiment, found that atmospheric air containing but $\frac{1}{3,240,000}$ of that agent, is capable of disinfecting its own volume of air loaded with the miasmata given off, during one minute of time, by four ounces of flesh in a high state of putrefaction, and that an extremely minute portion of ozone is sufficient to discharge the colour of a very large quantity of sulphate of indigo.

This conditional state of oxygen in the air is induced by electricity. Certain electro-chemical decompositions also give rise to it, and but for this agency the atmosphere would ultimately become incapable of sustaining life.

There are several tests for its presence, and—

"Numerous observations made by these means in various countries, and by various experimenters, have shown that ozone is most abundant at the surface of the ocean and on the tops of mountains, and that it is easier of detection when the air is in motion than when calms prevail, during north and east than during south and west winds, and in winter than in summer, especially during falls of snow. It has never been detected inside inhabited houses. In many instances, while the interior of a dwelling has afforded no trace of its presence, the external air close to the windows has manifested it abundantly. Ozone is not found under the shade of the forest. The absence of it from such places has led to the supposition that the currents of electricity which pervade the atmosphere, being diverted and conducted to the earth by the walls of houses, and the branches and trunks of trees, ozone has no opportunity of being produced in those situations, or, if there evolved, that it is immediately neutralized by the presence of oxidizable matter. A marked coincidence has been observed between the prevalence of certain types of epidemic disease and the absence or scantiness of ozone in the atmosphere. During the cholera of 1854, ozone was daily detected all round London, whereas no trace of it could be perceived in the more densely populated parts of the metropolis where the disease prevailed. On elevated ground it was generally present, but absent in low-lying localities. A marked diminution in the indications implying the presence of ozone has been very generally observed to precede the outbreak of an epidemic, while the reappearance of those indications has been found to form a very reliable sign of the abatement or cessation of the pestilence."

This is an important fact, since the original source and the medium of propagation of zymotic diseases are involved in considerable obscurity, but there are ample grounds for affirming that they are closely connected with foul and unwholesome conditions of men, and of their food and habitations.

"While we sometimes see the equilibrium between the purifying power of the atmosphere and the contaminating effects of bodily emanations upset by an undue development of the latter, in the midst of conditions of ventilation which are usually highly favorable, at other times we must suppose similar results to be produced by meteorological causes, which temporarily diminish the neutralizing properties of the air. Of the latter kind of influence we have, perhaps, an example in the remarkable deterioration which sometimes suddenly occurs in all the wounds and sores in an hospital, without any assignable cause being apparent, except a marked and unfavorable atmospheric change. In certain low-lying, densely crowded, and ill-drained localities, in which those two antagonistic influences may be so equally balanced as to afford no opportunity for the development in excess of the morbific side of the scale, some adventitious change in the electrical conditions of the atmo-

sphere, by determining a less copious evolution of the scavenging ozonic principle, may suddenly induce an outbreak of zymotic disease; just as intemperance, want, uncleanness of person, food or drink, associated as they commonly are with overcrowded dwellings, when suffered in an extreme degree, will produce a state of concentrated foulness in excess of the normal neutralizing power of the atmosphere, which must sooner or later engender fevers and other affections of the zymotic class. Whether the diseases so originated shall be typhus, cholera, yellow fever, or plague, will entirely depend on the nature of the country and the race to which the sufferers belong. In such circumstances, it is no longer ozone which predominates, but the downward *un*sanitary scale of organic contaminations. Here ozonoscope papers cease to be available, since they are incapable of affording indications below the ozonic zero. Another method of investigation, based on the employment of some material with properties fitting it for marking the variations in the amount of impurities present in the air, becomes necessary. By means of an oxidizable substance the presence of ozone in the atmosphere can be detected, and its intensity measured; to indicate the presence of oxidizable impurities in the air, and determine with more or less accuracy their amount, it would seem natural to have recourse to some agent containing ozone."

The use in ozonometry of substances liable to alteration of colour by contact with ozone, was suggestive to Mr. Condy of the choice of a body, capable of indicating, by somewhat similar appearances, the presence in the atmosphere of matter of a septic nature. Having been for many years engaged in the practical study of the purifying properties of the alkaline permanganates, and being deeply impressed with their extraordinary sensibility to the action of all kinds of impure matter, whether solid, liquid or aëriform, he early formed the opinion that the remarkable change of colour which those salts when decomposing undergo, might be taken advantage of for the estimation of atmospheric contaminations. He had found that when a weak solution of permanganate of potash was left exposed to air impregnated with foul gases, or emanations of an organic origin, it rapidly lost its fine pink colour, and that the greater the amount of impurities present the more rapidly and completely was this change effected. Here, then, were the means of recognising and estimating atmospheric impurities. By exposing solutions of the alkaline permanganates in shallow vessels, he perceived that he could readily detect organic matter in the air, and by observing the degree of decoloration produced in them, form a practical estimate of its character and amount; but as the air in contact with the per-

manganate was only part of an infinite quantity of impurities belonging to the entire mass of the atmosphere, and its action required to be extended over a considerable period of time, in order to show any result, he could not accurately gauge the amount of septic matter contained in any given volume of air at a particular moment. Although in the habit, since the year 1856, of demonstrating the presence of organic impurities in the atmosphere by means of weak permanganate solutions, and of judging comparatively of the average purity or impurity of the air of any place, such as a room or hospital ward, during a certain lapse of time, he had not thought of contriving a definite instrument for applying those substances to the examination of the local air of the moment. It was reserved for Dr. Angus Smith to be the first to make use of the alkaline permanganates for this purpose by means of his "air-test."

Dr. Smith's air-test consists of a wide-mouthed bottle, of the capacity of 100 cubic inches, into which is fitted a stopper of caoutchouc, provided with two tubes, one short and the other long enough to reach to the bottom of the vessel. Through the former the operator withdraws, by means of a suitable bellows-pump, the air contained in the bottle, which is thus replaced by that of the locality where the experiment is being made entering through the latter. A certain measure of a weak solution of permanganate of potash, of ascertained and standard strength, is poured into the bottle, and by shaking, brought into contact with the air which has just been admitted. When this is impregnated with matter of organic origin, the permanganate solution soon loses the pink colour which is peculiar to it. A further measure is then added, and repeated till the decoloration ceases, accurate note being kept of the number required, which furnishes the measure of the amount of oxidizable matter present in the 100 cubic inches of air operated on. The strength of the permanganate solution is graduated by a standard solution of oxalic acid, 1000 grains of which contain one of anhydrous acid; 5 grains of this solution decompose 600 grains of the permanganate solution. Mr. Condy, however, thinks that his original method of working with permanganate solutions in open vessels, is

much better qualified to fulfil the object here contemplated. By employing a number of small, shallow vessels, such as saucers, of white ware, containing a graduated series of permanganate solutions of various determined strengths, and leaving them exposed during the requisite period of time, a tolerably fair estimate may be formed of the average state of the air.

Although the application of the alkaline permanganates to the testing of the atmosphere is but in its infancy, says Mr. Condy, and leaves room for improvement as regards the mechanical appliances which are necessary for very accurate results, the scientific principle on which it is based is as certain and reliable as any chemical reaction. He concludes by observing—

"It is a circumstance greatly in favour of the familiar use of the alkaline permanganates for the purification of air, that the chemical composition of those salts, by qualifying them to neutralize organic impurities in whatever form they occur, renders them in a remarkable manner fitted for affording topical protection against the septic influences of foul air, as well as for most of the purposes of domestic and bodily ablution. Though not calculated to take the place of soap, they will be found extremely useful as supplementary detergents to that familiar article, as well as in a great variety of cases in which soap is not qualified to produce the desired results. More or less diluted with water, the alkaline permanganates furnish the most efficient means of purifying household utensils of all kinds, and of removing from them every vestige of taint and odour. Being entirely without noxious effects on the human frame, they are equally well adapted for the purification of the person. Used in the ordinary ablutions, and in the bath and bidet, these highly ozonized substances add greatly to the cleansing effects of water, and thus promote purity and healthy freshness of body. While, therefore, the alkaline permanganates, on the one hand, are capable of securing the purification of the air from those unwholesome contaminations which endanger health, on the other, they are, by reason of their remarkable disinfecting properties, admirably qualified for restraining and counteracting all those foul and morbid conditions of organized bodies in which aërial impurities have their origin."

Our apology, if any be required, for this *double* review is the interesting matter contained in the pamphlet, of which we have necessarily left much unnoticed.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD APRIL 8, 1863.

PRESENT:—The President, Messrs. Braby, Burley, Ellis, Ernes, Harpley, Hunt, Jex, Lawson, Robinson, Silvester, Wilkinson, Withers, and the Secretary.

The PRESIDENT in the Chair.

The minutes of the preceding meeting were read and confirmed.

A letter was read from Mr. Joss, M.R.C.V.S., of Mintlaw, Aberdeenshire, by which it appeared that his name had been originally misspelt in his diploma and afterwards erased. The diploma was submitted to the inspection of the Council.

Under the circumstances the Council deemed it advisable that Mr. Joss should be furnished with a new diploma; the one defaced being cancelled.

Letters were read from Professor Brande and Dr. Struthers relative to the meetings of the Court of Examiners, when it was determined that the London examinations should take place in the week commencing April 27th, and those of Edinburgh on April 24th and following days.

The *Secretary* announced that he had received the volumes wanting to complete the *Veterinarian* from Messrs. Braby and Goodwin; the body corporate would therefore now possess a perfect copy of that journal.

The thanks of the Council were ordered to be given for these presentations.

The Finance Committee reported that they had examined the vouchers of receipts and payments for the quarter ending at Christmas, and found them correct.

The Quarterly Balance Sheet of the Treasurer's account was read, from which it appeared that the liabilities for the quarter ending March 31, amounted to £119 1*s.* 9*d.*

It was moved by *Mr. Ernes*, and seconded by *Mr. Braby*—

"That the Report from the Finance Committee be received and adopted."—Carried.

The House Committee presented its Report. They recommend that a cocoa-nut matting for the students' room, and a table-lamp for the use of general Committees, and a die for stamping the books in the Library, be purchased.

The Report was received and adopted.

The subject of the gratuitous distribution of the Register was discussed. The motion of *Mr. Ernes*, seconded by *Mr. Lawson*—

"That it be distributed gratuitously both to mem-

bers of the profession and to the public in general"—was not carried.

It was then moved by *Mr. Silvester*, and seconded by *Mr. Jex*—

"That the Register be sold at one shilling, and that all public institutions be furnished with it free of expense on application to the President or Secretary."—Carried.

It was moved by *Mr. Hunt*, and seconded by *Mr. Robinson*—

"That each Master of Hounds be also furnished with a copy of the Register gratuitously."—Carried.

The arrangements for the forthcoming Annual Meeting were next considered, when

It was moved by *Mr. Ernes*, and seconded by *Mr. Wilkinson*—

"That Mr. Clement Lowe and Mr. Alfred James Rogers be appointed auditors."—Carried.

Messrs. Wilkinson, Ernes, Harpley, Braby, and the Secretary, were appointed a Committee for preparing the Annual Report.

A discussion then took place relative to the steps that should be taken for the better protection of veterinary surgeons.

It was moved by *Mr. Ernes*, and seconded by *Mr. Harpley*—

"That a Committee consisting of the following gentlemen, viz.: Messrs. Ernes, Field, Goodwin, Gowing, Harpley, Jex, Mavor, Moon, and Varnell, be appointed for the purpose of preparing a Petition with a view to the obtainment of an Act of Parliament for the better protection of veterinary surgeons; and also obtaining for them the immunities and exemptions to which they deem themselves justly entitled."—Carried.

It was resolved, on the motion of *Mr. Harpley*, seconded by *Mr. Ellis*—

"That an address be presented to Her Majesty, through the Home Secretary, congratulating her on the marriage of His Royal Highness the Prince of Wales with the Princess Alexandra of Denmark."

Mr. Harpley and the Secretary were appointed a Committee to prepare the Address.

The memorial received from the Home Office for the incorporation of the Glasgow Veterinary College was next read. A lengthy discussion ensued, when

It was moved by *Mr. Robinson*, and seconded by *Mr. Silvester*—

"That a letter similar to the one dated May 19th, 1858, which was at that time sent to the Home Office on the proposed affiliation of the New Edinburgh Veterinary College, be

now transmitted to the Home Office, in reply to Sir George Grey's letter, dated March 26th, 1863, accompanying the memorial from James McCall, praying for the affiliation of the Glasgow Veterinary College; and that a copy of the charter be likewise sent with the letter."—Carried.

500 copies of the Charter and Bye-laws were ordered to be printed, and also 200 copies of the diploma.

A new register was likewise ordered to be purchased for entering the names of the members of the body corporate.

It was ordered that any book required by a member of the body corporate should not be taken from out of the custody of the Librarian.

Cheques were drawn for current expenses.

By order of the Council,

WILLIAM HENRY COATES,

Secretary.

Copy of the Congratulatory Address presented to Her Majesty.

"To the Queen's most Excellent Majesty—

"May it please your Majesty,—We, the President, Vice-Presidents, and Council of the Royal College of Veterinary Surgeons desire humbly to approach your Majesty to express our heartfelt congratulations on the marriage of His Royal Highness the Prince of Wales with Her Royal Highness the Princess Alexandra of Denmark.

"We earnestly pray that this auspicious event may conduce to the personal and domestic happiness of your Majesty, and that, under the all-powerful influence of your Majesty's example, it may also ensure the fulfilment of the sanguine and well-founded hopes of a loving and devoted people.

"Given under our common seal this 10th day April, 1863.

(Signed) "JAMES BEART SIMONDS,

"*President.*"

Reply to the Address of Congratulation to Her Majesty.

"WHITEHALL; 23*rd April*, 1863.

"SIR,—I have had the honour to lay before the Queen the loyal and dutiful address of the Royal College of Veterinary Surgeons on the occasion of the marriage of His Royal Highness the Prince of Wales; and I have to inform you, that Her Majesty was pleased to receive the Address very graciously.

"I am, Sir,

"Your obedient servant,

"G. GREY.

"The Secretary to the Royal College
of Veterinary Surgeons."

Parliamentary Intelligence.

DISEASES OF CATTLE.

Mr. Griffith asked the Vice-President of the Privy Council whether he had any objection to lay upon the table of the House the report of the commissioner sent by Government in the course of last autumn to the Continent to inquire into the existence of sheep and cattle contagious or infectious diseases in foreign countries, and into the liability of their introduction into this country.

Mr. Bruce, in the absence of his right hon. friend, said that the report, which was a very long one, was now under the consideration of the department, and if it were found suitable for official publication it would be printed in the appendix of the usual annual report of the medical officer.

Mr. Griffith asked when that document was likely to appear.

Mr. Bruce.—Very shortly; at any rate, in a few weeks.

Veterinary Jurisprudence.

ATROCIOUS CASE OF CRUELTY TO A BULL.

On Tuesday, March 24th, at the Town Hall, Tunbridge, before Mr. Talbot, chairman, and a full bench of magistrates, Hezekiah Anneatt, labourer, of Tunbridge, appeared to answer the complaint of the Royal Society for the Prevention of Cruelty to Animals for having cruelly ill-treated, abused, and tortured a bull on the 17th ult.

Mr. W. Love, from the office of the Royal Society, attended to prosecute, and stated the facts, from which it appeared that the bull belonged to one Mr. Simmons, a butcher, of Maidstone, who purchased it for £25, on the day in question, at Tunbridge Market. The defendant was employed to help to drive the animal to the railway station, and on arriving at the station considerable difficulty was found in getting the bull into the truck in which it was to be sent to Maidstone. The defendant, who was armed with a long, thick stick, having an iron goad at the end of it, whilst standing behind the animal, was heard to say, "I will show you how to get him in," and he then thrust the stick into the body of the animal, to the extent of two feet, repeating the act a second time. The bull was got into the truck, and in a minute or two it sank on the floor, uttering moans, and, after enduring much agony, it died in five minutes.

A subsequent examination of the animal revealed injuries of a frightful nature, and the evidence of several respectable witnesses proved beyond all doubt that the act of barbarity was perpetrated by the defendant deliberately and designedly.

Mr. Love, after calling the attention of the bench to the clause in the Act of Parliament which empowers the justices to commit offenders to prison for three calendar months, said he felt it his duty also to press for compensation, to be paid by the defendant to the owner of the animal, under the fourth section of the Act. He confessed that his only view in doing this was to secure for the defendant an additional punishment for the atrocious act he had been guilty of, for he believed the defendant was unable to pay any money, and he might be imprisoned in default.

The case having been proved,

The Chairman, after the bench had consulted together, said this was the most horrible case that had ever been brought before that bench; he could not have supposed that any sane man living would be guilty of so wicked and disgusting an act of inhumanity. The defendant had borne a very good character up to the time he committed this act, and letters which he produced from respectable persons showed that he was always kind to the animals under his care; but for this the bench would have committed him for the full term of imprisonment. The decision now was that for the cruelty to the animal he be committed to Maidstone gaol for two calendar months, with hard labour; and, in addition, that he pay £5 as compensation to the owner of the animal, or suffer a month's hard labour in Maidstone gaol.

The prisoner was then conveyed to Maidstone to undergo the imprisonment, with hard labour, for three calendar months.

PLYMOUTH GUILDHALL.

Before W. Burnell, Esq.

UNWHOLESOME MEAT.—ROT IN SHEEP.

William Slocombe, a butcher, carrying on business in King Street, was summoned to answer the complaint of Mr. Rowley, Inspector of Nuisances, for exposing for sale six sheep unfit for human food. Mr. Whiteford, Town Clerk, appeared to prosecute on behalf of the Board of Health. In opening the case, he said that he had received instructions from the Board of Health to prosecute the defendant, for all must acknowledge that it was a very serious complaint. The public placed confidence in defendant, and expected him to supply his customers with food fit for them to consume; but instead of so doing he had stocked his shop with eight sheep, six of which were totally unfit for any human being to eat. The law was very severe on persons who were guilty of such a breach of it; but the board did not wish to press the case against defendant, though he well deserved the severest penalty the law could inflict. The Board of Health, who brought this case, as well as others, before the Bench for the good of the public, would be content if the magistrates issued an order for the carcasses of the six sheep to be destroyed.

It appeared that Inspector Rowley, the evening before, was passing by King Street, and observed in defendant's shop six sheep that had just

been brought in, and thought they looked very diseased. He immediately sent for Mr. Collins, veterinary surgeon, who ordered the carcasses of the six sheep to be seized.

Mr. Collins stated that he was called to visit the shop of defendant between ten and eleven o'clock on Friday night; he went there, and ordered the six sheep to be seized. They were the same sheep now produced in court; they were quite unfit for the consumption of human beings, and had suffered from a disease called coade or rot, that had its seat in the liver, and which was very prevalent amongst sheep this season.

Mr. Brock, a butcher of thirty years' experience, gave similar evidence.

The Bench ordered the carcasses to be immediately destroyed.

TORRINGTON.

Before JOHN TYRREL, Esq, Judge.

HOLE *v.* BEEDLE.

IMPORTANT HORSE CASE.

THIS was an action brought for the recovery of £40, the value of a horse sold. Plaintiff was Alfred R. Hole, Esq., a well-known county magistrate, of Beam House, near Torrington, and the defendant Thos. Beedle, Esq., a gentleman residing at Bradworthy. Mr. Lionel Bencraft, of Barnstaple, appeared for the plaintiff; Mr. Crosse, of Southmolton, for the defendant.

Mr. Crosse said he should apply for an adjournment of the case in the absence of an important witness for the defence—Mr. Drake, veterinary surgeon, of Exeter—unless Mr. Bencraft would consent to admit in evidence a certificate given by Mr. Drake, or agree to that gentleman's evidence being taken by the Judge, without either of the advocates being present.

Mr. Bencraft said it would certainly be inconvenient to his client not to have an opportunity of cross-examining the witness against him. Of course he (Mr. Bencraft) could not consent to an adjournment of the case, which would involve his client in heavy expense.

Mr. Crosse intended that the defendant should bear the expense of the adjournment, if it took place for his convenience.

Mr. Bencraft thought he could not hesitate to admit the certificate if Mr. Drake should not arrive in time to give evidence.

Mr. Crosse.—Then I will go into the case.

Mr. Bencraft then stated the facts as they were afterwards detailed in evidence. The plaintiff's chestnut mare "Crinoline," which was the subject of this action, was bred by him, and had been in his possession from its foaling till it was sold to the defendant. It was an excellent animal and a capital hunter. Mr. Hole was a gentleman who indulged in the sports of the field, being accustomed to follow the hounds with the Honorable Mark Rolle. In December last the plaintiff's servant was taking the mare over a fence, when she stumbled and injured the skin of the off fetlock. None of the tendons were injured, and Mr. Gregory, the veterinary surgeon, who was called in, treated it with cold-water

dressings. In getting up and down in the stable the wound was .. tated, and it therefore was slow in healing; but in January the mare was well enough to be taken out for airing, and in February she was so far recovered that no injury was sustained save in the appearance and an enlargement of the fetlock. Shortly after this Mr. Hole met Mr. Beedle in the hunting field, and some conversation ensued respecting the mare. Mr. Hole said he would sell her if he could get the price he wished, viz., £50; and he then directed defendant's attention to the injury. A day or two after, the defendant again saw the mare—in fact, rode her—and she was taken over several fences. On the 27th February the parties again met at Stapleton Brake, when defendant said £50 was too much for the mare, and offered £40 for her. Plaintiff then said he thought it right to inform defendant that she was a crib-biter—that she contracted the habit while tied up—that he used a crib strap, and that if he (Mr. Beedle) purchased her, he would let him have the strap he was in the habit of using. Defendant said he did not object to the mare on that account—that he already had a horse which was a crib-biter. The conversation was also renewed as to the blemish on the fetlock. Mr. Beedle asked if Mr. Hole would take a third person's opinion as to the injury. Plaintiff referred him to Mr. Gregory, who was then in the hunting field; and Mr. Gregory explained the nature of the injury that had caused the blemish, and also asked defendant if he was aware that the mare was a crib-biter. After this interview with Mr. Gregory, the defendant rode up to the plaintiff and said, "I'll give £40 for the mare, and it's mine." He then asked Mr. Hole to keep her for a few days, as he had no stall, to which the latter consented. Mr. Beedle then rode up to Mr. Deane, of Webbery, and told him he had bought the mare. Mr. Deane said, "I suppose you know it's a crib-biter;" to which defendant replied, "I know all about it." The mare was taken to plaintiff's stables, and on the 4th of March Mr. Hole received the following note from the defendant:

"Bradworthy; *March 3rd*, 1863.

"Dear Sir,—I will send to Bideford on Thursday next, for the mare, and hope it will be convenient to your man to leave her at the "Commercial Inn," at about 1 o'clock. I fear we shall have a very small number at the meets this week. I hope you will be able to come down for a day or two.

"Believe me, my dear Sir, yours truly,
"T. Beedle."

The plaintiff accordingly sent his servant with the mare to the "Commercial Inn," Bideford; the servant there saw the defendant, who requested him to wait a little while, as he had a note to send back. He waited several hours, expecting to receive a cheque for his master; the defendant at length gave him the following note, desiring him to deliver it to Mr. Hole, and to take back the horse:

"Bideford; *March 5th*, 1863.

"Dear Sir,—On looking at the mare this morning, I saw that the enlargement on her leg is considerably larger than I had expected, and I requested Parsons (the vet.) to examine her. He says that the animal will not be fit for work for at least three months, and that if hunted in her present state she will go lame. He adds that swelling cannot be reduced, as Mr. Gregory had led you to understand. As I bought the mare after your saying that the limb was nothing worse for the accident, you will, I am sure, not wish me to take her till her leg is perfectly sound. "Believe me, yours truly,
"T. Beedle."

He (Mr. Bencraft) had never heard anything so puerile as the reason assigned by the defendant for sending back the mare—"that the enlargement on her leg was considerably larger than he expected"—that Mr. Parsons, the "vet." said the swelling would never be reduced. Mr. Gregory had given it as his opinion that the swelling would diminish when the mare had rest. On receiving defendant's second note, plaintiff sent him the following rejoinder:

"*Thursday evening.*

"Dear Sir,—I was much surprised to find my servant had brought back the mare this afternoon. As there can be no doubt whatever that the deal was a perfectly clear and decisive one, I send her to you with directions to my man, if you object to receive her, to place her at the inn, at Bradworthy, at your expense. I regret being obliged to take this step, but you have left me no alternative.

"I remain, yours truly,
"Alfred R. Hole.

"P.S.—I may add that I have again seen Mr. Gregory, who assures me that the accident is never likely to cause lameness."

The mare was sent, as stated, and on the following day the defendant wrote the plaintiff as follows:

"Bradworthy; 6*th March*, 1862.

"Dear Sir,—During the absence of myself and servant, to-day, I find that your mare has been left in my stables by your direction. In reply to your letter, I beg to observe that there can be no bargain unless the mare is sound and 'nothing worse for the accident.' You will remember that you warranted the mare sound, and dissuaded me from my intention to have Mr. Parsons' opinion, at the same time referring me to Mr. Gregory, who endorsed your statements. As I find Mr. Parsons diametrically opposed to the opinion of yourself and Mr. Gregory, you will not be surprised that I adhere to his judgment, and find it necessary to give my servant directions, in the event of your refusing to receive the mare, to leave her at the "Commercial Inn" stables, Bideford, at your expense. I cannot help saying that I regret this unpleasant affair; and I am ready, should you feel disposed, to submit the matter to a third opinion; and should that be favorable to Mr. Gregory, I will, without hesitation, take the mare; and should it agree with Mr. Parsons, I shall expect you to retain her.

"Believe me, dear Sir, yours truly,
"T. Beedle."

The landlord of the "Commercial Inn" declined to receive the mare into his stables, and the defendant then wrote the plaintiff the following note:

"Bradworthy; 8*th March*, 1863.

"My dear Sir,—As I find that the proprietor of the "Commercial Inn," Bideford (for some reason which I cannot as yet understand), refused to take your mare, I beg to inform you that she is at the "New Inn," at your expense.

"I am, dear Sir, truly yours,
"A. Hole, Esq." "T. Beedle.

This ended the correspondence, and his client was compelled to bring the present action. Throughout the whole of the transaction the plaintiff had been actuated by honest and honorable motives, and he had nothing to disguise or explain away. The defendant had engaged the services of a most able advocate—his learned friend, Mr. Crosse—that by his

ingenuity he might justify the course he had taken in repudiating this bargain; he certainly had made a very wise selection. It should be borne in mind that the plaintiff never said that the mare would never be lame. He pointed out the injury to defendant, and gave him Mr. Gregory's opinion; defendant went to Mr. Gregory, and was satisfied to take the mare at the risk. Mr. Parsons had not seen the mare till that day, and knew nothing of the injury; but defendant had passed his hand over the part and had also ridden the mare. He ridiculed the reasons assigned by the defendant for sending her back. He (Mr. Bencraft) was prepared to prove that at that moment the mare was perfectly sound. As to the offer of arbitration, he had only to remark that the mare was not sold on such conditions; the bargain was clear, and the terms beyond dispute. Besides, the old saying was, "Give a dog a bad name, and hang it;" so might it be said of a horse when it had been blown upon and left on Mr. Hole's hands for alleged unsoundness. Mr. Hole was about to leave England for the summer, as he was accustomed to do; and he objected to have a horse left on his hands with a bad character. The learned gentleman then called in evidence the plaintiff,

Mr. Alfred Hole, who deposed—I bred the mare "Crinoline," which is the subject of this action, out of a good mare, by "Kingsdown." She was five years old in June last. In December, 1862, the mare met with an accident caused by my man leading her over a fence. I immediately sent for Mr. Gregory, the veterinary surgeon, of Bideford. In the months of January and February, at his advice, she was taken out to exercise. She never showed any lameness. On the 10th February I rode her to hunt with Lord Portsmouth's hounds. The meet was at Wooley Pound, and I rode her a long run, and she proved perfectly sound. I saw Mr. Beedle in the course of the day, and in the course of conversation said I should sell her, as she was not up to my weight. I asked £50 for her. We talked of the blemish, and I explained the cause of it. On the 13th February I was out with Mr. Rolle's hounds, and again rode the mare. On the 16th February she was ridden by Veale, the colt-breaker. Mr. Beedle spoke to me about her, and said he should like to buy her if he could get rid of one of his own horses. He also remarked that my price was too high. He trotted her for two miles very fast. We frequently conversed as to the blemish. After he had ridden her he appeared pleased, and I offered to take off £3 from the price named, in consideration of the blemish. Subsequently I again met Mr. Beedle, when he offered me £40 for her. I then told him that she had lately taken up crib-biting—that I used a strap over the neck to correct it. He said he did not care much for that—that one of his own horses did so. As to the enlargement, I told him that Mr. Gregory had said that during the summer the enlargement might be reduced by an application of iodine. He then asked if I would allow him to have the opinion of Mr. Parsons. I said I had no objection, but he would throw away his money, as Mr. Gregory knew all about her, and no one could give him an honester opinion. I afterwards saw defendant with Mr. Gregory. Mr. Beedle then rode up to me and said, "I am perfectly satisfied, and we'll close the deal." He then asked if I would keep the mare for a few days, and I agreed to do so at once. This was on Friday, the 27th February. On the following Wednesday Mr. Beedle sent for the mare, and I sent her into Bideford, as requested. The mare had never been a crib-biter till the accident. I warranted her perfectly sound, except in those two particulars.

Cross-examined by Mr. Crosse.—I don't know whether defendant or myself first began the conversation about the mare. He rode with me

for a considerable time, and he had opportunities of looking at her. I think the mare was kept in the stable for a fortnight. The accident happened about one hundred yards from the stable. She did not walk lame, but bled a great deal. I sent for Mr. Gregory, who came within two hours. After I took her into the hunting field she never went lame; in fact, she was never lame either before or after the accident. I rode her from 9½ till 6, with Lord Portsmouth. She was remarkably fresh on the next morning. I don't recollect saying that she would fetch £100 in another year. I said "Kingsdown's" stock had fetched £100. The mare never made a false step with me. She fell with me, owing to a bank giving way. This was on the 10th of February. I rode her again two days after. I did not see defendant get off and examine the fetlock, by putting his hand on the enlargement. On the 27th February defendant offered me £40 for the mare. I swear that he did not say it should be only conditional on having his "vet.'s" certificate of soundness. I said she was sound, with the exception of the enlargement of the fetlock, and the crib-biting. I did not mention the crib-biting till he offered me £40; the reason was, that I did not know it, as the mare had taken up the habit recently. I said she never was a regular crib-biter, and when the strap was on she scarcely did so at all. I might have seen her crib-biting; there were no marks on the manger. Mr. Beedle asked if I had any objection to having his "vet.'s" examination as to her soundness. I asked what unsoundness he suspected. He said, "She might have curby hocks." I was not opposed to his having Mr. Parsons. I said I had no objection to his having Mr. Parsons, or any one else. I said, "No 'vet.' could tell more than I have told you about the two blemishes. Mr. Gregory could give a better opinion than any one else, as he has known her from a colt." Before he talked about going to the "vet." I told Mr. Beedle that Mr. Gregory had said the swelling might be reduced by iodine.

Re-examined.—Mr Beedle came back to me and said he had consulted Mr. Gregory, and his statement agreed with mine.

Mr. T. D. Gregory sworn.—I am a veterinary surgeon, of Bideford. I know the mare "Crinoline." I knew her from a colt. On the 4th December I was called to attend her for an accident. It was simply an incised wound through the skin, over the region of the fetlock-joint. It was nothing more than a skin wound. The joint was in no wise injured, nor were the tendons or the ligament that connected the part with the joint. She was never lame—not in the slightest degree. I ordered the mare out to exercise on the 10th January. So satisfied was I that the injury was of a trivial nature, that I promised Mr. Hole that he should ride her in the hunting field by February; and he did so ride her with Lord Portsmouth's hounds on the 10th February, and on the 13th with Mr. Rolle. On the 27th February I was out at Staple Vale, when Mr. Beedle rode up and said, "Is it fair to ask you for an opinion in the hunting field?" I said I should be happy to serve him if I could. He said he had bought or was about to buy Mr. Hole's chestnut mare. I remarked that she was a crib-biter, and we had some conversation as to the cause and effect of crib-biting. I examined the mare on Saturday last, and she is now perfectly sound. I never had more confidence in giving a professional opinion than in this instance. I don't believe she will ever become lame, or that any ill effect will result from the injury, save and except the appearance.

Cross-examined.—The cellular tissue lies between the skin and the joint. I don't believe that it was injured in any way; nor would it be a matter of importance if such were the case. I am perfectly certain that

the tendon was not injured. Iodine is sometimes used in reducing flesh enlargements. The blemish is not a large one. I thought at the time, and think so now, that the enlargement might be reduced by iodine. There is no stiffness in the mare's movements. The cut does not interfere with the arrangement of the joint in any way. I pledge my professional reputation that the accident does not impair the usefulness of the mare, and it is my opinion that no injury beyond the appearance will result from the accident. It's a very common accident. There is a horse posting at the "New Inn," Bideford—sometimes sixty miles a day—which once sustained similar injury, but it is now perfectly sound.

Mr. Crosse.—Oh, yes! but you know they generally use "screws" for posting. (A laugh.)

William Anthony Deane, Esq., sworn.—I was in the hunting field on the 27th February. I there saw the defendant. We were riding together, and talking of stag-hunting. I said it was unfair to work the same horses both summer and winter. Defendant then said he had bought Mr. Hole's mare "Crinoline." I said, "Is it a fair question to ask what you gave for it?" He said £40. He did not know that Mr. Hole would like to have the price named, though he had not bound him to secresy. I asked if he was aware she had taken to crib-biting. He said, "Mr. Hole has told me so." He said further that he had asked Mr. Hole to keep the mare for a few days till he could rig up a crib for her.

John Heale sworn.—I am a servant to Mr. Hole, and have lived with him for eleven years. I know the mare "Crinoline;" remember the accident, and Mr. Gregory's being sent for. She never went lame, nor was she a crib-biter till the accident. She is not a bad crib-biter now.

Samuel Veale sworn.—I am a colt-breaker. I have been in the habit of riding "Crinoline." I never knew her lame. I rode her in the month of February last; she did not fail in the slightest. On the 16th February, in Huntshaw Wood, I heard Mr. Hole say to defendant he would give back £3 for the blemish.

Mr. W. J. Brewer, veterinary surgeon, of Barnstaple, sworn.—I have examined the mare carefully. She is perfectly sound, without any stiffness whatever. The injury she sustained would not make the mare anything the worse, so far as her usefulness is concerned. I took her out of the stable and trotted her. The skin soon adapts itself after a cut of that kind. Barring the unsightliness, the mare is as good and safe as ever she was. I examined her on Saturday, and she walked and trotted soundly.

Thomas Davey sworn.—I am butler to Mr. Hole, and lived with him for five years. I know the mare in question. I never knew her lame, or chargeable with any defect. At my master's direction, I took her to Mr. Beedle, at the "Commercial Inn," Bideford. I told him I had brought the mare according to order; and he said, "All right—I will send back a note." I thought 'twas the cheque he intended to send. He kept me waiting two hours and a half, and then he gave me a note, and told me to take the mare with the note back to Mr. Hole.

Cross-examined.—Defendant did not say that he had consulted Mr. Parsons.

James Grant, ostler at the "Commercial Inn," Bideford, sworn.—I know the mare "Crinoline." I never knew that she was a crib-biter. The mare was brought to the "Commercial" on a Saturday by Mr. Beedle's man, who said he had brought it, and 'twas to be kept there at Mr. Hole's expense. I spoke to Mrs. Chester, who refused to receive it, and Mr. Parsons' man took her away again.

This was the plaintiff's case.

Mr. Crosse then addressed the Court on behalf of the defendant.—He submitted that the plaintiff must be nonsuited, inasmuch as there had been no legal contract. It was incumbent upon the plaintiff to show that this case came within the Statute of Frauds, which would have required in this case that the animal should have been received by defendant; that there should be a written contract, or that part of the money should have been paid. Perhaps his friend (Mr. Bencraft) would contend that there had been a constructive delivery of the mare, the defendant having requested that she might be taken into plaintiff's stable for a few days, or that there was a delivery pursuant to the letter sent by defendant, requesting she might be sent to the "Commercial Inn" on a given day. He (Mr. Crosse) contended that neither of these circumstances would amount to an acceptance or receipt of the animal within the meaning of the 17th section of the Statute of Frauds. In support of his views, the learned gentleman cited the case Howe *v.* Palmer (B. and A.), published in the most recent edition of 'Chitty on Contracts.' With regard to the delivery at the "Commercial Inn," Bideford, he submitted that that was no delivery within the meaning of the statute. The mare was bought subject to the opinion of Mr. Parsons, and when it was found that his opinion was diametrically opposed to Mr. Gregory's, she was immediately returned to the owner. Mr. Parsons pronounced the mare to be unsound; and this induced the defendant to return her, with the note that had been read. It was true Mr. Hole sent her back again, but that could not help him if there had not been a previous delivery and acceptance of the mare. The learned gentleman then entered into an elaborate argument to prove that the objections he had raised must be fatal to the plaintiff's case. There was no part of Mr. Beedle's conduct that was not perfectly consistent with a direct refusal of the mare. He then cited the decision of the superior court in the case Carter *v.* Touissant, which, he said, was quite in point and confirmatory of his view that the present case did not come within the range of the Statute of Frauds, and that plaintiff must necessarily be nonsuited.

His Honour.—I shall not nonsuit. (Applause.)

Mr. Crosse.—Perhaps it would be well to restrain such demonstrations.

His Honour.—I think the applause quite uncalled for.

Mr. Crosse then addressed himself to the main features of the case. He said he was in great difficulty, owing to the absence of a material witness—Mr. Drake, the eminent veterinary surgeon, of Exeter, on whose opinion he relied, which, indeed, induced him to advise his client to defend this action. Mr. Drake had given a certificate in which he stated that the tendency of the injury plaintiff's mare had sustained was to render her permanently unsound. Mr. Parsons' opinion was to the same effect. The learned gentleman then reviewed the evidence adduced by the plaintiff and his witnesses, and stated that he should be prepared to prove by the defendant's servant that the mare, when delivered at the "Commercial Inn," knuckled and tripped; that he did not consider it safe to ride her. In conclusion, he expressed his regret that the case had not been settled by the mediation of a third party.

Mr. Thomas Beedle sworn.—I live at Bradworthy, and am the defendant in this action. The first time I saw the plaintiff's mare was on 10th February, at Wooley. I had some conversation with Mr. Hole about the mare, which he began. He said the injury was not likely to interfere with her usefulness—that Mr. Gregory was of the same opinion. As to the swelling, he proposed to reduce it with iodine when the mare had rest. We had a subsequent conversation, on the 16th February. I repeatedly told Mr. Hole that I had no wish to buy the horse. I said I

did not wish to do so till I had got rid of one of my own. I rode part of the way home with Mr. Hole, and rode her a little way. I never examined the swelling; I relied entirely on Mr. Hole's representation, as I never intended to buy her till the moment. On the 27th February plaintiff said, "Do you think anything more of that mare of mine? I will take less for her, as I am going away." I said, "I'll give you £40 for her, with a 'vet.'s' certificate of soundness." He said, "Then that's a bargain." He further said, "I think it right to say that she is addicted to cribbing." He stuttered and stammered. (Witness shrugged his shoulders, and endeavoured to give the Court an idea of plaintiff's manner on the occasion.) He said she cribbed very little, and he used a strap, which corrected the habit. I said, "Mr. Parsons is my 'vet.,' and he'll examine her." He said, "It will be a guinea thrown away." I said it would only be half a guinea. I then asked him to ride her into Bideford for Mr. Parsons to examine her; I thought it would be a much more satisfactory way. Mr. Hole tried to dissuade me from having my "vet.'s" opinion, in consequence of which I spoke to Mr. Gregory. I did not consult him as my "vet." Mr. Gregory said the mare was decidedly not the worse for the cut. I did not see the mare at all on the day I bought her. I saw her at a distance. When she was delivered at Bideford I was astonished at the size of the enlargement. I then went for Mr. Parsons. I had entirely relied on Mr. Hole's representations. I afterwards wrote a note, and sent her back to the plaintiff. She was subsequently sent to my stables, and I directed my servant to take her to Mr. Parsons, and tell him to hold her on.

Cross-examined by Mr. Bencraft.—I intended the shrugging of my shoulders, &c., to represent Mr. Hole's manner and "stuttering and stammering." I believe Mr. Hole was candid and straightforward. I did not wish to convey a contrary impression by my acting. I waived having the "vet.'s" certificate after hearing whas Mr. Hole and Mr. Gregory said of the mare. When I wrote the letter requiring the mare to be delivered to me, I had quite given up the idea of having my "vet.'s" certificate as part of the bargain.

William Mallett, servant to the defendant, proved that the mare was taken to his master's stables, at Bradworthy, on the 7th of March. Witness took the mare with a note to Mr. Parsons, and then took the mare to Mr. Hole's. She kept knuckling and tripping on the way. Mr. Beedle never had any conversation with me on the subject. I do not think her a safe animal; she constantly knuckled.

Mr. Francis Parsons sworn.—I practise the veterinary art at Bideford. I am not a member of the College. I have been in practice for thirty-five years. I examined the mare in question; she had an enlargement and a swelling of the fetlock, arising from a wound received; she knuckled several times. I pronounced her not sound or fit for work, and said she would not be fit for some time. I have seen her ten times since; the last occasion was on Saturday. I am still of the same opinion; I consider her unsound. I should not think the enlargement could be reduced by iodine. I think it would have the contrary effect. I consider that the action of the extensor ligament is impeded.

Cross-examined.—I have been in practice thirty-five years. Mr. Gregory has since settled down at Bideford in the same profession. I knew his opinion of the case. I believe there is a slight thickening of the sheath of the tendon. I should have been able to tell exactly the nature of the injury if I had seen her at the time of the accident. I can tell the effect. There is a stiffness in her going. I don't think a horse that had sustained such injury could stand three days' hard hunting and not

betray lameness after. I have heard Mr. Hole and his servants say so, but I can have my own opinion of it. I don't think she had soundness of action before the accident, or both legs would be the same.

William Isaac, ostler at the "New Inn," Bideford, proved that the mare cribbed occasionally. She was a regular cribber, and had eaten away about half the manger!

His Honour.—Do you know whether she swallowed it?

Witness.—I don't know. All I know she is a cribber. The strap made no difference.

Mr. Crosse put in the certificate of Mr. Drake, which was to the effect that the injury would probably result in lameness. The learned gentleman also read a telegram he had just received, stating that a severe cold prevented his being present to give evidence on trial.

John Howe, head ostler at the "New Inn," deposed that the mare was a cribber—a very bad one.

This completed the evidence for the defence.

Mr. Bencraft rose to sum up for the plaintiff.

His Honour.—I will not trouble you, Mr. Bencraft. It is urged by the defence that the mare was sold subject to a certificate from the defendant's veterinary surgeon; but this is denied by the plaintiff, and I find it not proved. I find that there was a distinct deal—that the mare was sold and delivered to the defendant, who requested the plaintiff to give it accommodation for a few days till he should send for it, which he did, and it was again delivered to him at Bideford.—Verdict for the plaintiff for the amount claimed, with costs.

The judgment was received with some applause, which was instantly suppressed by the officers of the court.

ARMY APPOINTMENTS.

War Office, Pall Mall; *March* 31*st*, 1863.

6*th Dragoon Guards.*—Acting Veterinary Surgeon W. Hall to be Veterinary Surgeon, *vice* A. J. Owles, appointed to the Staff at Aldershott.

Cavalry Depôt (Canterbury).—Veterinary Surgeon of the First Class W. C. Lord, from the 5th Lancers, to be Veterinary Surgeon.

Staff (Aldershott).—Veterinary Surgeon of the First Class A. J. Owles, from 6th Dragoon Guards, to be Veterinary Surgeon.

MISCELLANEA.

FLINT.

Flint-nodules, it appears, owe their origin to sponges. These last are animal in their nature, their interior being cellular, and on their exterior exist numerous animalcules, having cilia, by means of which they create a current in the water, and thus obtain food. In the lapse of ages these have died, and their cells have become filled up with silex, once held in solution in the waters of the ocean.

If we revert back in imagination to the period when these flints were formed, we see the floor of the ocean abundantly peopled with marine creatures. There were star-fishes, echinites, madrepores, and infusoria; but the sponges were, perhaps, the most numerous. Consisting of silica, with a very perishable organized tissue, these were ready at any time to undergo petrifaction, if circumstances were favorable. Bring two globules of mercury near to each other, and see how readily they run together into one mass. There you have a mechanical example of the way in which silica was precipitated from the water, and aggregated into nodules about the spiculæ of the sponges, and by degrees filled up the whole skeleton, preserving its form, but destroying its substance, and thus changing sponges into nodules of flint. Mr. Brande has imitated this very process in experiment, and has seen the formation of flinty nodules about a nucleus, when finely powdered silica has been mixed with other earths, and the whole diffused through water. Every separate sponge offering a separate nucleus, suffices to explain why flints should commonly appear, as they do, with such decided individuality of character; they are petrified sponges, formed in much the same way as those petrified forests travellers tell us of, where the trees are all flint; the woody fibre has disappeared, but the original structure is still traceable in the mass of silex in which the perished organisms are now represented. That silica abounded in the seas of the period in which the chalk beds were deposited is certain; but we are far from having arrived at a clear idea as to the chemistry of the whole subject to which flints introduce us. We can see the sponges in the flint, and the flint in the sponges, and the more we observe, reason, and compare, the more are we convinced of their geological and chemical relations.

THE

VETERINARIAN.

VOL. XXXVI. No. 426. JUNE, 1863. Fourth Series. No. 102.

Communications and Cases.

ŒDEMA OF THE LARGE INTESTINES OF A HORSE, SUPERVENING UPON AN ATTACK OF INFLUENZA.

By Professor Varnell, Royal Veterinary College, London.

This remarkable case occurred in the practice of Mr. Henry Stanley, M.R.C.V.S., who, in the early part of April, 1863, requested me to see it, as he considered the symptoms somewhat singular, and also uncommon. The animal was of the cart breed, five years old, and prior to this attack had been in very good health.

The history I had of the case is briefly as follows:—Four days previously to my being consulted the horse was observed to be unwell; he did not feed as usual, and the bowels were slightly constipated. The pulse was quick and feeble; the tongue furred upon its upper surface, edges, and tip; the gums were unnaturally red, and the mouth hot and dry. The urine was observed to be scanty and high coloured, and the visible mucous membranes were also injected, and presented a yellow tinge.

Such treatment as Mr. Stanley considered to be necessary was, I believe, rigidly carried out, and no very unfavorable symptoms were observed until the fourth day, with the exception that the animal had not passed any fæces for the last twelve hours, which had, however, previous to this time become of a pultaceous character.

About the middle of the fourth day he evinced symptoms of abdominal pain, but it was not very acute in its nature; and the pulse increased in quickness, but was very feeble.

He wandered round his box, and occasionally laid down, but did not roll on his back; he was very restless, and passed neither fæces nor urine. These symptoms were considered as indicative of continuous suffering from subacute disease, and were present when I arrived, about eight o'clock in the evening. I carefully examined the horse, and endeavoured to interpret the symptoms, but, I confess, that I was unable to do this satisfactorily. My prognosis, however, was unfavorable, although not decided; for at times the expression of the animal's countenance led me to think that he might recover. I could not suggest any particular course of treatment, as I was unable to make out the true nature of the case, or to account for the peculiarities I observed; nevertheless, I told Mr. Stanley that there must be some intestinal obstruction. I now, without coming to any satisfactory conclusion as to the precise character of the malady, or without being able to suggest any special treatment, left the patient, requesting Mr. Stanley to let me know on the following day how the horse was going on. Counter-irritants, I believe, were applied to the surface of the abdomen, and some sedative medicine given, but without affording the slightest relief, and he died during the night, not many hours after I left him.

Mr. Stanley made a *post-mortem* examination, and kindly brought me the large intestines, being the organs chiefly affected; and he stated that if I thought the case of sufficient interest to be laid before the members of the *Veterinary Medical Association,* I was at liberty to do so, which I did on the following evening. I had hoped that Mr. Stanley would have attended, and given to the members the history of this singular case; but as he was not present, I described that which he had told me relative to the case when I visited the horse, and also briefly alluded to the morbid changes that had taken place, adding a few remarks in reference to the causes which I thought might have produced them.

I have stated that the large intestines were sent to me for inspection. I ought to have included the mesocolon, to which they were attached. This is important, as considerable lesions were observed to exist in it. No other organs, either of the abdomen or thorax, came under my notice; I therefore infer that none were diseased, or, at any rate, not to an extent, in Mr. Stanley's opinion, worth consideration, or he would not have omitted to have sent them. I nevertheless think it very probable that if the liver, heart, and lungs, had been closely examined, much light might have been thrown upon the true pathology of this disease.

Examination of the morbid parts.—The blood-vessels of the mesenteric glands were engorged with blood, and in many of them their coats had given way; extravasation of blood being necessarily the result. Effusion of blood, minus the red particles, had also taken place between the two layers of the peritoneum forming the mesocolon, and among the blood-vessels at the root of this organ, which from its being in a semi-coagulated condition, formed an immense bulky mass. Near to the attached border of the intestine several small masses of extravasated blood were also observed, and the inter-peritoneal space for some distance above the attached border of the intestine was much thickened from effusion. I shall now briefly notice the colon itself, which to my mind presented a very remarkable appearance. This organ was very much enlarged, and when pressed upon with the finger it had a peculiar doughy feel. No other peculiarity was observed externally, except its having a yellow tinge, which was likewise common to the tissues generally. On opening this viscus, both its interior and also the surfaces of the incision presented a singular aspect, such, indeed, as I have never before witnessed, at any rate not to the same extent. The mucous membrane was not only much thickened, but in some places it was separated from the muscular coat by serous effusion, to the extent of three inches. The muscular coat was also thickened by interstitial deposition, and was so remarkably fragile that it could be torn with the slightest force. The free surface of the mucous membrane was pale in colour, with the exception of a few small patches, in which the vessels were congested. These patches, from the attrition of the ingesta, had become slightly abraded, and might have been mistaken for ulcers. In many places the mucous membrane projected into the tube in the form of bags, varying in size, here and there extending around the whole of the interior of the intestine, thus materially diminishing its calibre. Throughout the whole length of the bowel there was, however, no indication of any inflammatory action.

In accounting for these morbid changes taking place, may we not suppose that some material—*miasmata*, for example, had been taken into the system from without, which, acting as a ferment to the whole circulating mass of blood, had thereby contaminated it? Or may not some morbific matter have been generated in the blood, and thus produce similar results, if not eliminated from the system? Or, on the other hand, may not the usual products of the metamorphoses of the tissues, or even of the blood itself, be retained in the circulation, and act as a septic poison? The blood, being altered

in quality, would be quite unfit for the preservation of health; its effects at first might be general, and to an extent not sufficient to interfere materially with the function of any particular organ, but unexpectedly its influence would become concentrated upon some of the nervous centres, and thereby either partially or totally suspend their function.

The nervous centres, whether belonging to the cerebro-spinal or sympathetic system of nerves, if supplied with impure blood, would be in a degree incapable, normally, of receiving impressions through the centripetal nerves, or of generating force to be conveyed by the centrifugal nerves to distant parts of the body. If such can be the condition of the nervous centres, we may, under such circumstances, easily imagine what the fate of the tissues must be whose action depends upon a due supply of healthy nerve stimulus; and further, also, of those organs which the tissues enter into the composition of, and upon which their healthy action depends. Suspended action of any of the centres of the sympathetic nerve would result in paralysis of the muscular fibres supplied by the nerves connected immediately with those ganglia; and having in view the arteries, capillaries, and veins of the intestine, we cannot, I think, suppose otherwise than that the coats of these vessels would become relaxed, thinned, and weakened, and their calibre much enlarged. In this condition exudation of the watery parts of the blood, to a greater or less extent, would be favoured, and perhaps even an actual rupture of the vessels might take place with the escape of the red blood into the areolar tissue. Such we have found to be actually the case in this instance.

Further, to account for these and similar phenomena, might not the blood not only be in a vitiated condition from the causes above alluded to, but have been also chemically altered in quality, in consequence of the animal not having partaken of any food for several days; as it would then be deficient in some of the constituents usually derived from the food, such as albumen and certain salts? The red cells also would be fewer in quantity, and there being thus proportionably a large amount of water in the composition of the blood, we cannot be surprised that the latter constituent should easily pass through an unusually porous membrane. I have before remarked that the symptoms very much resembled those produced by some intestinal obstruction, and I have no doubt but such actually was the case in this instance; not, however, from any substance impacted in the interior of the bowel, but by the abnormally swollen state of the mucous membrane. If we could have diagnosed this case correctly, we should not

have been able to preseribe any medieine, or suggest any treatment likely to have been benefieial, even in affording temporary relief.

I have thus briefly stated my views on some of the most prominent points of this unusual case. Had eaeh division been considered more in detail, it would have been mueh more complete; nevertheless, sueh as it is, I hope it will tend to awaken a spirit of inquiry among the junior members of our profession into the pathology of influenza in its various phases, whieh, I feel satisfied, are not so well understood as the importance of the disease demands.

PARALYSIS OF THE COLON OF A HORSE.

By the Same.

The subjeet of this affeetion was a eart-horse, the property of a large firm in the metropolis. For some time the animal had been under the eare of an experieneed veterinary surgeon; but from the ambiguous nature of the symptoms, and the doubt entertained of reeovery, it was deemed advisable to have a seeond opinion. I was therefore requested to see the horse, and to report whether I thought it better to have him destroyed or to adopt still further treatment. Before deciding on either of these points, I thought it right to aseertain the history of the ease. I was informed that the horse had been the subject of periodie attaeks of spasmodie eolic for more than a year; but that during the latter part of this period they had beeome more frequent, and of longer duration, until at last they became almost continuous. Having heard thus mueh, I then made a careful examination, with a view of forming a diagnosis, and the following were the symptoms I observed:—Anxious countenanee; eoat rough and staring; visible mucous membranes pale; body large and tympanitie; pulse about 40 in the minute; breathing quieker than natural; fæees in a fluid state (whieh I was told had been the case for several days); urine voided infrequently, and then only in very small quantities. Oeeasionally the animal would lie down, but not to remain in that position long, and when standing he frequently pawed with his fore feet. These symptoms were evidently indieative of pain, although not of a very acute character; nevertheless, to my

mind, they gave evidence of some intestinal obstruction, but of what nature I could not decide, nor was I able to say in what particular division of the intestines it was located. Considering the length of time the horse had shown these symptoms, and that there was no chance of relief being afforded by the aid of medicine, I advised that he should be destroyed; and as this advice coincided with the views taken of the case by the veterinary surgeon who attended him, my suggestion was carried into effect, and thus an opportunity was afforded me of making a *post-mortem* examination. The abdominal cavity being laid open, and the intestines removed, the large intestine was found to present such an unusual appearance as to be at once noticed by those who happened to be present. The colon, from the point where it makes its sigmoid flexure to where it crosses the spine the third time, was enormously enlarged, while the other divisions of the intestines appeared to be in a normal condition. The part of the colon referred to was in some places as much as eighteen inches in diameter, and its coats thin and pallid. It contained a firm mass of coarse ingesta, occupying about five or six feet in length, and averaging about ten inches in diameter. Judging from its character, it must have been some time accumulating. This mass of fæcal matter did not, however, fill the whole of the interior of the bowel, for a space existed along its attached border, which was partially occupied with semifluid matter. This space had apparently been the course which the ingesta had taken for some time, by which it had gradually deposited some of its solid contents, thereby adding to the accumulating mass before alluded to.

These are the principal peculiarities noticed by me in this investigation, which, coupled with the symptoms previously narrated, suggest the following practical considerations:

First. Upon what did the abnormal condition of the bowel primarily depend?

Secondly. Had the case been correctly diagnosed in its early stages, could a cure have been effected?

Thirdly. Was it consistent with sound practice to order that the horse be destroyed?

These points, of course, are capable of being subdivided; but to discuss each division separately would occupy more time than I can devote to their consideration; therefore the few remarks I shall make on this important case will be only suggestive. In the first place, I think the arrestation of the fæcal matter in the intestine depended primarily either upon a loss of the normal contraction of the muscular coat,

through a defective supply of nervous force, or upon the bowel becoming accidentally so much surcharged that the muscular coat was unable to propel the contents onwards; and the contained mass, being gradually added to, over-distension followed, which weakened, thinned, and eventually paralysed the muscular coat.

The latter, I am inclined to think, was most likely to have been the cause. But should it have been the former, we might then expect that the deficiency of nervous force depended upon disease of the inferior vertebral ganglion of the sympathetic nerve, or of some of its offsets, as the mesenteric division of the solar plexus.

In the second place, although the evidence was strongly in favour of there being an obstruction in the intestines, and in no other part of their course so likely as in the colon, still, as before stated, its *character* could not have been determined, nor am I aware that its removal could have been effected by the aid of medicine or any therapeutic at our command. I think I may safely state that, should the loss of function of the muscular coat of the colon have depended upon organic disease of the nerves which supply it, or their ganglia, a restoration to healthy action would have been out of the question. On the other hand, should accidental engorgement have been the primary cause in producing these results, I think that the chances of a cure being effected by nature and art combined would have been greater; still I must confess they would have been very remote.

I have been told that such or similar cases are not very uncommon in the human subject; and very often, from the fæcal matter which is passed being in a semiliquid state, they are treated as cases of diarrhœa, by giving such medicinal agents as are calculated to correct these watery evacuations. If this is the case, obstruction from such causes in the large bowel is not always correctly diagnosed in human practice. In the practice of the veterinary surgeons, an error in forming a diagnosis in these cases is not so much to be surprised at, as in our patients we are deprived of the verbal information the suffering human being is able to communicate to his medical attendant.

ON SOME OF THE DISEASES OF THE RESPIRATORY ORGANS OF THE HORSE AND OTHER ANIMALS.

By Professor Brown, M.R.C.V.S.

(*Continued from p.* 203.)

The prevalence of diseases of the breathing organs is a fact not difficult of explanation, when we consider the delicacy of the structures implicated, and the influence which the various atmospheric changes must necessarily exert upon them.

Theoretically, the function of respiration is of vital importance; any interruption to the process, or serious deterioration of the medium inhaled, should be followed or attended by general systemic disturbance. Not only is the blood restored, and rendered fit for the offices of nutrition by the absorption of oxygen, but numerous effete products are at the same time, and by the medium of the same physical process, eliminated; indirectly, therefore, the removal of the refuse and the supply of new material in the animal economy together depend upon the perfect performance of respiration.

Notwithstanding the absolute truth of these statements, we are constrained to admit that derangement of the function, and deterioration of the medium inhaled do coexist without any very decided or palpable interference with nutrition. We do not intend to promulgate the doctrine that impure air may be breathed habitually with impunity, nor that organic disease of the lungs is compatible with fine health; but we cannot shut our eyes to the facts of everyday experience, showing how very disproportionately small an amount of injury does result under circumstances the very suspicion of whose existence would have justified the gravest apprehensions.

What we have often alluded to as the restorative power of the organism, the faculty which seems to oppose a passive but effective resistance to the effects of the various disturbing influences, may be adduced in the place of a better argument to explain what must have occurred to every observer as a problem not easy of solution.

The resistant power of the system varies, however, very considerably, and, under certain circumstances, a susceptibility,

as remarkable as the previous immunity, is perceived. In no instance is this more marked than during the prevalence of epidemic catarrh, which attacks subjects in the most capricious manner, often leaving those seemingly most predisposed, and certainly most under the influence of atmospheric causes, to affect others whose condition should have afforded a protection, and on whose behalf every possible precaution had been taken. Even in the case of common cold, which often assumes an enzootic or epizootic character, so much as to give rise to a very general belief of its infectious nature, it has often seemed to us to occur when no reasonable charge could be alleged against the atmosphere, which, so far from experiencing extreme change, has, on the contrary, preserved a remarkable uniformity, giving no colour to the plea of transition from hot to cold, or cold to hot, upsetting our nicely constructed arguments, and settling the controversy as to relative influences of each by proving to demonstration that neither was concerned, and forcing one to the somewhat unsatisfactory conclusion that some poison, of a nature so subtle as to elude detection, must be present in the air we breathe.

It accords, we believe, with general experience to state, that among respiratory diseases we meet with very little of an active character. Fifteen years ago, and even later, we can recollect cases of inflammation of the lungs, attended with a full, bounding pulse of 70 or 80, maintaining its force after three or four bleedings in the course of two or three days; cases which would support the effects of depletive treatment for a fortnight, and leave the animal not more prostrated than he now is left after a few days' illness, with a system of treatment which permits depletion to be only very cautiously and temperately employed. What has become of those full venesections, those exhausting rowels, those fabulous doses of digitalis, or hellebore, and all the medicinal host whose aid we were wont to invoke in our efforts to kill disease? Gone! all of them, to make up a harrowing record in our earlier case-books, whose perusal in the present day makes us almost doubt the evidence of our own handwriting.

According to established usage, it is necessary to attempt some sort of classification of the maladies which are located in different parts of the respiratory system, in order to escape the confusion that must otherwise occur where diseases pass into each other almost imperceptibly. In a great number of cases we find the mucous membrane particularly affected, from the nostrils to the larynx, and ultimately to the

bronchial tubes. Under other circumstances the disease is centered in the parenchyma of the lung, or extends to the pleural membrane; we may, therefore, safely speak of affections of the mucous membrane, of the parenchyma, of the lung, and of its investing serous membrane.

Certain general features may be quoted as distinctive of each class of affections, and as their consideration will not affect the inquiry into the special peculiarities of each malady, it may not be uninteresting to introduce them at the commencement.

Diseases of the mucous membrane of the air-passages are usually, almost invariably, attended with increased secretion, or, more correctly, with exudation from the secreting surface; not necessarily an increase of the normal mucus, but rather an additional outpouring of fluids of more or less viscidity, rendering the secretion thicker or thinner, and otherwise modifying its constitution and appearance. The dry stage, so called, during which the secretion is lessened, is not of long duration, nor is it often very well marked; when properly defined, it is distinguished by a bright colour of the membrane and a peculiar deadness of surface, arising from the partial drying of the mucus, which is not produced in sufficient quantity to preserve the usual moist condition.

In very many instances a dry cough indicates irritability of the laryngeal or bronchial membrane, when there is no dryness of the nasal membrane, nor, indeed, an unhealthy appearance; probably in such cases, could we inspect the part, we should find an absence or diminution of the natural secretion.

Prostration is generally associated with affections of the mucous membrane, and that to a much greater extent than can be accounted for by the mere loss of fluid from the surface; besides being present often too early in the disease for the discharge to have produced much effect upon the system. In epidemic catarrh this prostration is one of the earliest consequences, and forms a very important element in the disease.

The occurrence of a purulent discharge from mucous surfaces does not in any great degree complicate the disease or its consequences, as a very slight modification of the secretive action suffices for the formation of pus in abundance, the difference between the two materials, pus and mucus, seeming to exist rather in the fluid menstruum than in the characteristic corpuscles, which are closely allied. Blood in small quantities may be mixed with the discharge without giving grounds for serious apprehension; the rupture

of superficial vessels, especially when a cough is present, being a thing of frequent occurrence.

Ultimately, disease of the mucous membrane may result in hypertrophy of the general structure, or of the epithelium only, and various forms of exudation, occasioning constriction or the formation of membranous bands.

Affections of the parenchyma of the lung have especial reference to the vascular system, consisting, as they do, of disturbance of the circulatory function; such diseases as active determination of blood, congestion, and inflammation, belong to this class. The first-named disease is essentially local, and generally transient; its chief peculiarity is acceleration of the respiratory movements, without a corresponding excitement of the general circulation, the bronchial murmur being audible over the whole of the chest. In congestion the motion of the mass of blood is retarded or arrested, and hence the state of the pulse is at once indicative of the affection. Inflammation, although an active disturbance, is not often indicated by very energetic signs, and a tendency to assume the subacute form is almost constant.

Diseases of the investing membrane of the lungs will occupy a considerable portion of our attention. Of the general character of the affections, it may suffice to say that most of the forms of derangement are of a passive nature, being indicated by slight, oftentimes almost imperceptible, symptoms, terminating in exudations of fibrinous fluid, and occasioning changes of such importance in the lungs as to render the animal unfit for active service, even if they do not immediately terminate his existence.

We shall endeavour, from the evidence before us, to show the insidious nature of these affections, and the probability of their unsuspected existence for some time prior to the development of the symptoms, which are usually accepted as the signs of their commencement, but which, in reality, we are persuaded are only presented when the disease has already made considerable progress.

(*To be continued.*)

OBSERVATIONS ON "SOUNDNESS."

By R. H. Dyer, M.R.C.V.S., Waterford.

(*Continued from p.* 264.)

The visual organ being required to take cognisance of every surrounding object, its size, colour, shape, and form, during the night as well as during the day, it is necessary that the individual so circumstanced should have the power of moving that organ in as many directions as may be requisite. This is done by means of its muscles. Man is not endowed with the same power as the horse is with regard to the movements of the globe of the eye. Man has no retractor muscle; he does not require it: the horse has, he not being possessed of hands. It may well be said, that this muscle (or that which the muscle influences) is to the horse what a hand is to man. It is necessary, therefore, that each and every muscle of the globe of the eye, and its appendages, should be well developed, or in all probability sight will be impaired to a certain extent. We frequently hear of this muscle of the neck and that muscle of the leg being but poorly developed, but I have never heard it remarked that the muscles of the eye are in any way at fault, except in man, in that peculiar affection termed strabismus. I have never seen this in the horse. It is a subject comparative anatomists would do well to turn their attention to. It has before been said, that some large horses have small eyes, and *vice versâ;* but it has not to my mind been fully and satisfactorily explained. Our attention has been directed almost solely to the lens. When we take into consideration the many and varied hues of light the horse has to take cognisance of, in daylight as well as in the dark, we need not wonder at his making some woeful mistakes when the visual organ is out of order; and in addition to this, he has the ignorance of his, sometimes, ill tempered master to influence or to puzzle him in his difficulties. Too much importance cannot be attached to the development of muscle in connection with the eye of the horse.

The direction light travels is always in straight lines, if the medium through which it passes is of uniform density. When a ray passes from a rarer to a denser medium, it is refracted or bent towards the perpendicular; when a ray of light passes from a denser to a rarer medium, it will be refracted from the perpendicular; when rays proceed from several

points of an object which is luminous, at some distance, and fall upon a double convex lens, they are brought to a focus upon the other side of it; so that an inverted picture is formed upon a screen placed in a proper position to receive it. Dr. Carpenter writes:—"The eye, in its most perfect form—such as it possesses in man and the higher animals—is an optical instrument of wonderful completeness, designed to form an exact picture of surrounding objects upon the retina or expanded surface of the optic nerve, by which the impression is conveyed to the brain. The rays of light, which diverge from the several points of any object, and fall upon the front of the cornea, are refracted by its convex surface whilst passing through it into the eye, and are made to converge slightly. They are brought more closely together by the crystalline lens, which they reach after passing through the pupil; and its refracting influence, together with that produced by the vitreous humour, is such as to cause the rays that issue from each point to meet in a focus on the retina. In this manner a complete inverted image is shown." Dr. Golding Bird, in his 'Manual of Natural Philosophy,' states:—"Rays of light, on impinging upon the eye, are refracted through the transparent cornea, those incident on the sclerotic being reflected or absorbed. The cornea may be regarded as constituting the anterior surface of a meniscus lens, of which the posterior surface is formed by the anterior capsule of the crystalline lens, the aqueous humour forming the refracting medium of this fluid refractor. The rays of light which thus tend to be refracted to a focus, pass through the pupillary opening of the iris, those passing too near the margin of the lens formed by the anterior chamber being reflected or absorbed; the iris, answering the purpose of the perforated diaphragms in microscopes and telescopes, and being capable of varying its aperture, possesses advantages altogether unattainable in metallic diaphragms. The pencil of rays having passed through the fluid meniscus, impinges on the crystalline lens, and is there considerably refracted; this refraction is modified by the action of the vitreous humour, the last medium into which the pencil passes; and finally an inverted image of the object, from the several points of which the rays of light are propagated, is painted on the retina. All rays which are reflected in the interior of the eye, or pass too obliquely for distinct vision, are absorbed by the black pigment with which the interstices and folds of the choroid coat are imbued." Sir David Brewster, in his 'Optics,' writes:—"I have found the following to be the refractive powers of the different humours of the eye, the ray

of light being incident upon them from air:—Aqueous humour, 1·3366. Crystalline lens at surface, 1·3767. Centre, 1·3990. Mean, 1·3839. Vitreous humour, 1·3394. But as the rays refracted by the aqueous humour pass into the crystalline and those from the crystalline into the vitreous humour, the indices of refraction of the separating surface of these humours will be—From aqueous humour to outer coat of the crystalline, 1·0466. From same to crystalline, using the mean index, 1·0353. From vitreous to crystalline outer coat, 1·0445. From same to same, using the mean index, 1·0332.

We are further told by Dr. Golding Bird :—"The eye in all warm-blooded animals is formed upon the type of man, with the occasional addition of supplementary structures, better fitting the organ for the performance of vision in the particular animal. In fishes, residing in a medium of nearly the same refractive index as the aqueous humour, the latter fluid becomes useless, and is replaced by a viscid secretion of greater refractive power. The crystalline lens is in these animals nearly spherical, and placed behind the cornea, and the iris, which is close to the latter, is undilatable. In insects the eye is simple, consisting of a lenticular cornea, placed in front of a nervous expansion. When an object is viewed with both eyes in a healthy condition, it appears single, whilst it is obvious that a distinct image is painted upon each retina. This is readily explained by the fact, that the two images lying exactly in the direction of the optic axis overlap each other, and virtually produce but one impression. If the optic axis be not brought to coincide at the place of the object, the two images are separated, and then, as in the case of squinting persons, the object appears double, or confused. . . . . .

"The variation of focal length of the eye has been attributed by some physiologists to an alteration in the form of the crystalline lens by the contraction of its own fibres; but the structure of muscular fibre is so completely identical, from whatever part of the animal kingdom it may have been obtained, and so essentially different from the fibrous structure of the lens, that it appears difficult to conceive the existence of muscularity in that organ; moreover, in all the higher orders of animals, the muscular structures are copiously supplied with blood-vessels and nerves, neither of which have been detected in the crystalline lens. In order that vision may be distinct, it is necessary that corresponding points of the object and of the retina should be conjugate foci of the eye; or, in other words, that the pencils of rays

diverging from each point of the object, and entering the pupil, should converge to a focus on the retina. If, as in myopic or short-sighted persons, the rays converge to a focus before they reach the retina, from the too great convexity either of the lens or cornea, they impinge on that sensitive organ in a state of divergence, and the pencils proceeding from contiguous points of any object are superposed upon and consequently confuse each other; and the further the focus of incident rays is from the refracting surface of the eye, the further the focus of refracted rays will be from the retina, and consequently the greater confusion; hence, with persons thus affected, the difficulty of discerning objects increases with their distance from the eye. The very term 'myopic' is derived from the effort naturally made to diminish the aperture of the transmitted pencils, and consequently the confusion, by partly closing the eyelids, on the same principle that an object placed near to the eye may be seen distinctly through a pin-hole in a card. A concave lens, of suitable power, by increasing the divergence of the incident pencil, will diminish the convergence of the refracted rays, and consequently carry back each focal point towards the retina, and this is the kind of spectacles worn by short-sighted persons.

"In presbyopic or long-sighted persons, on the contrary, the lens or the cornea is not sufficiently convex, and as the foci of refracted pencils are consequently situate behind the retina, a similar superposition and confusion of contiguous pencils ensue. In this case it is necessary to diminish the divergence of the incident rays, which is effected by a convex lens; and the convergence of the refracted pencils being thus increased, their foci will be brought forward to the surface of the retina. As the term 'presbyopic' implies, this is the state of vision incidental to old age, and arises from the diminution in the convexity of the crystalline lens that naturally takes place in advancing years. . . . . Individuals are not unfrequently met with whose eyes are as insensible to certain tints as the ears of others are to particular sounds. Several cases of this kind have been described, in which the following colours have been confounded by the persons affected with this curious defect of the visual organs:

"Bright green, with grayish-brown and flesh-red. Rose-red, with green and gray. Scarlet, with dark green and hair-brown. Sky-blue, with grayish-blue and lilac-gray. Brownish-yellow, with yellowish-brown and grass-green. Brick-red and rust-brown, with deep olive-green. Dark violet, with deep blue. This remarkable state occasionally

occurs in disease, and disappears on the patient's recovery.

"The author once treated a case of cerebral disease in which vision was previously perfect, but during the attack the patient confounded several tints with each other. The colours mistaken for each other in this instance were in general the complementary ones, red being mistaken for green, and orange being confounded with blue; of the physical cause of this remarkable state, however, nothing is known."

It has been said, the power of distinguishing colours is not enjoyed but by few persons, although their visual organs are perfect in other respects. An uneducated eye can convey to the brain no peculiar property of the object seen, such as colour, form, and distance—it is acquired by education. We see this in all young animals, and young children also. The hands and fingers of children are essentially useful; they feel the objects placed before them in order to learn their peculiarities. Persons born blind and restored to sight in after-life have recourse to the same means to accomplish the desired end. Colts and young calves generally employ their *nasal* organs for the same purpose, and so do most other animals with which I am acquainted.

(*To be continued.*)

CASE OF SUSPECTED POISONING OF A DOG.

By B. A. Kettle, M.R.C.V.S., Market Drayton.

My dear Sir,—Having lost a well-bred greyhound, twelve months old, under what I conceive circumstances calculated to excite suspicions of foul play, I forwarded to you, per London and North Western Railway, on Saturday last, the whole of the abdominal viscera, together with the heart and lungs, for your examination, and opinion, if you will do me the kindness to give it me.

The subject of my communication was a black dog, in fine condition. He had been fed since I became his owner, which is about ten months, upon raw flesh, Indian meal, and milk, chiefly. Occasionally this diet was varied with paunches, bones, and potatoes, and up to Tuesday, the 31st of March, he appeared in perfect health and spirits. On the morning of that day he seemed as usual, and took his food as well; but at 4 p.m. my pupil discovered him coiled

up on some straw, refusing to obey his call, and listless. Shortly after this my attention was directed to him.

Symptoms.—Staring coat; nose dry; surface of body cold; breathing unaltered; pulse rapid and feeble; mucous membranes much, very much, injected. He had vomited in several places near him. As I had been threatened that the dog should be poisoned, I supposed such was the case, and I at once gave him an emetic, after much resistance. He rapidly grew worse, and refused all food, until the following evening, when he drank about a quart of milk. These symptoms underwent no change, or, at least, they only became aggravated, until Friday morning, 3rd of April, when he died.

The *post-mortem* appearances it will be unnecessary to describe, further than to state that the abdomen contained about two quarts of bloody fluid—indeed, I believe a large portion of it was fluid blood.

To me there is something extraordinary in the appearances that all the viscera present; such being certainly not consistent with any form of canine disease with which I am acquainted. I am, dear sir,

Yours very faithfully.

Professor SIMONDS.

THE ARMY APPOINTMENTS IN THE INDIAN SERVICE.

INDIA; *March* 17, 1863.

DEAR SIRS,—Knowing how willing you are at all times to take up the cudgels on our behalf, *when right and justice are our due*, I avail myself of a moderately cool day to pour forth to you and my professional brothers "the phials of my wrath."

On the 1st of July, year of grace 1859, Her Majesty was pleased to issue a Royal Warrant, wherein the pay and rank and position of her Army Veterinary Surgeons were bettered.

In April, 1860, nearly ten months later, the Governor-General in Council publishes the following order in the *Fort William Gazette*, extracts of which appeared in *Fort St. George Gazette*, dated 6th April, 1861.

"FORT WILLIAM; *April* 3, 1860.

"No. 364 of 1860.—Under instructions from Her Majesty's Secretary of State for India, the portions of Her Majesty's Warrant of the 1st July, 1859, which refer to

relative rank and precedence of Veterinary Surgeons of Her Majesty's British Forces are declared to be applicable to Veterinary Surgeons of Her Majesty's Indian Forces.

"It has not been considered expedient at present to alter the existing regulations affecting the pay and allowances, or the conditions of invaliding and retirement, of this class of officers.

"*Extracts from Her Majesty's Warrant of 1st July, 1859, which are declared applicable to Veterinary Surgeons of Her Majesty's Indian Forces.*

"'I. The grade of Veterinary Surgeons in our Army shall be three in number, viz.—

"'1. Staff Veterinary Surgeon.

"'2. Veterinary Surgeon of the 1st class.

"'3. Veterinary Surgeons.'

"The following general orders by His Excellency the Governor-General of India in Council are republished:

"*General Orders by His Excellency the Governor General of India in Council.*

"FORT WILLIAM, 19th August, 1861.

"No. 722 of 1861.—The following paragraphs of a military letter from the Right Honorable the Secretary of State for India, No. 278, of the 8th July, 1861, are published for general information:

"FORT ST. GEORGE, *September* 6, 1861.

No. 301, of 1861.

"'1. Since the date of my despatch* No. 233, I have received a communication from the Secretary of State for War, enclosing a letter from the Principal Veterinary Surgeon, Woolwich (7th June, 1861), who, with reference to the doubt expressed in your military letter, No. 41, dated 2nd April last, as to the practicability of examining Veterinary Surgeons in India, in order to test their fitness for pro-

"'3. No Veterinary Surgeon shall be eligible for promotion until he shall have passed such examination as our Principal Secretary of State for War may require, and shall have served on full pay, with the Commission of Veterinary Surgeon, for five years.

"'4. A Veterinary Surgeon of the 1st class must have served fifteen years in the Army, with the Commission, on full pay, before he will be eligible for promotion to the rank of Staff Veterinary Surgeon.

"'5. In cases, however, of emergency, or when the good of the Service renders such

* 'Madras G. O. G.,' 30th July, 1861, No. 250.

motion, expresses an opinion that it is very desirable that if the Royal Warrant of 1st July, 1859, be adopted, it should be fully carried out, and states that no difficulty was encountered in doing so in the cases of the 2nd and 6th Dragoon Guards, both in India, the examinations being written and carried on confidentially between the officer in command of the regiment and himself.

"'2. Lord Herbert concurs in the opinion that no sufficient ground has been shown for a modification of Clause 3 of the Warrant, requiring Veterinary Surgeons to be examined, as applied to India.

"'3. Under the new organization of the Army in India, there will henceforth be no regimental employment for Veterinary Surgeons of the local Service, but those now in the Service may be promoted under the Royal Warrant of 1st July, 1859, their examinations being conducted by means of written questions, prepared by the Principal Veterinary Surgeon in this country, in the mode above described.

"'4. In carrying out this arrangement, a list of Veterinary Surgeons who have served the required periods for promotion should be sent home from time to time, in order that the examination questions may be prepared and transmitted to India.'

"This cancels the decision communicated in letter from the Right Honorable the Secretary of State for India, dated 7th June last, published in the Government General Order,* No. 625, of the 16th July, 1861.

alteration necessary, it shall be competent for our Secretary for War to shorten the several periods of service above mentioned, in such manner as he shall deem fit and expedient.

"'6. Promotion from one rank to another shall not necessarily be given by seniority, but by selection, for professional ability and meritorious conduct.'

* 'Madras G. O. G.,' 30th July, 1861, No. 250.

"15. The relative rank of the Veterinary Officers of our Army shall be as follows:

"Veterinary Surgeon, on appointment, as Subaltern.
"Veterinary Surgeon of the 1st class, on promotion, as Captain.
"Staff Veterinary Surgeon, on promotion, as Major, but junior of that rank.

"16. Such relative rank shall carry with it all precedence and advantages attaching to the rank with which it corresponds (except as regards the Presidency of Courts Martial, and of all Military Courts, Committees, and Boards of Inquiry, where our will and pleasure is that the Senior Combatant Officer be always President; and except, further, any military command whatever), and shall regulate the choice of quarters, rates of lodging money, field allowances, forage, servants, fuel and light, or allowances in their stead, detention, and prize-money. But when a Veterinary Officer is serving with a regiment, corps, or detachment, the Officer commanding, though he be junior in rank to such Veterinary Officer, shall be entitled to a preference in the choice of quarters.

"17. Veterinary Officers shall be entitled to all the allowances granted on account of wounds and injuries received in action as Combatant Officers holding the same relative ranks.

"18. Their families shall, in like manner, be entitled to all the allowances granted to the families of Combatant Officers holding the same relative ranks.

"19. Veterinary Officers shall be held entitled to the same honours as other officers of our Army of equal relative rank. This does not, however, extend to the compliments to be paid by garrison or regimental guards, as laid down in the Regulations of our Army."

We all know how far short of our expectations this long-expected Warrant proved when it was made known to us; nevertheless, we were thankful, and as a rising professional body, we hailed it as being the means of improving our social position.

Our thanks, too, are due to our indefatigable Principal Veterinary Surgeon, who has at all times proved our champion, and I trust he has not yet cast off his armour, but will do battle for us poor Indian vets.

The Royal Warrant says, "Whereas it has been represented to us that it is expedient to raise the position and

rank of the Veterinary Surgeons of our Army, and to increase the pay, and half-pay of the Officers of that Service, our will and pleasure is that from and after the date of this our Royal Warrant, the following rules shall be established for the admission, promotion, and retirement, and for the pay, half-pay, relative rank and allowances, of the Veterinary Surgeons of our Army, and that by these rules our Commander-in-Chief shall be governed in recommending officers for admission, promotion and retirement."

See now what our Governor-General in Council says in paragraph 2nd of his order in *Fort William Gazette* of 3rd of April, 1860:

"It has *not* [the italics are my own] been considered expedient at present to alter the existing regulations affecting the pay and allowances, or the condition of invaliding and retirement, of this class of officers."

Why and how can Sir Charles Wood or the Governor-General modify a Royal Warrant, or consider it "*not*" expedient, when the Royal Warrant distinctly says in its first paragraph "that it *is expedient*"? Are Royal Warrants waste-paper only, or, like Turkish manifestoes, meant merely to appease temporary discontent?

Shortly before the Warrant appeared I had intended memorialising the Home Government on the injustice of keeping veterinary surgeons as cornets for ten years, but when this "balm of Gilead," in the shape of a Royal Warrant, was published, I threw down my pen, and my sad heart rejoiced, as did those of my professional brethren. We trusted, however, to a broken reed, and here I am, still a cornet, having been so for nearly seven years, and must be so for upwards of three more. At the end of that time (if not before) I must go home to recruit my health. I must pay my passage, as also that of my wife and children; the children must be educated (not as veterinary surgeons—no, God forbid!). I must pay my passage out again, and *all this* on the *savings from a cornet's pay.*

The thing is absurd; and the end must be, either increased pay or *no* veterinary surgeons; and those now in will hail the day when they can go and "shake the dust from their feet."

It may be asked, If you are dissatisfied, why do you stay? I answer, an army veterinary surgeon makes but a poor country practitioner, especially an Indian one. Moreover, one does not like to have to begin the world again after spending the best years of his life in a country like this; nor does he relish the idea of being called up by farmer Giles at

12 o'clock on a December or January night, to pay a visit to a horse or cow some twelve or fourteen miles distant. The very thoughts of such an event make my poor old liver feel congestive.

There is an error abroad that veterinary surgeons are better off in India than at home, but I hope to prove this a fallacy. It is true he is in receipt of a greater sum of money; but when we come to show his expenses, the most fastidious will acknowledge the justness of what I say.

I will give you the receipts and expenditures presently; what I want just now is to introduce "*Our Young Vet.*" He has just landed in the country, and expects to see his name in the *Gazette;* he does not wait long; he is, perhaps, ordered to join and do duty with a troop or brigade of artillery, or regiment of light cavalry, under a senior member of his profession. Should the artillery be his destination, he must provide himself with a complete undress uniform, suited to that branch of the service, and purchased at the presidency town at cent. per cent. over and above what it would cost in London; but as he came out uncertain as to what branch of the service he would be attached, this could not be helped; so the tailors are the gainers.

Well, he has served six months under this senior—an antiquated gentleman, perhaps, who talks to you about his doings at College when it stood all alone in the green fields, and when Coleman was his pole-star; he calls all the medicines by their old names, and hates your new-fangled ones, and new ideas too. He applies for a "Board of Examiners" to examine you *professionally*.

The Board generally consists of a President, Deputy Inspector-General of Hospitals—Doctors Curry, Rice.

Members—Garrison Surgeon Mulligatawny; Surgeon Kebob, 27th Bamboo Rangers; Surgeon Pillow, 32nd Jungle Skirmishers; Veterinary Surgeon, Coleman Moorcroft Brown, Artillery.

The day after the promulgation of this garrison order he finds himself in the presence of these hoary-headed gentlemen, sitting in solemn conclave. He is asked to take a chair, and naturally expects the venerable president to ask him to describe the minute anatomy of the eye or brain, but imagine his delight on hearing the board express their surprise at the absurdity of assembling men of a strange profession to examine and report upon the efficiency of a young veterinary surgeon.

President, loq.—"Do you know anything about horses, Mulligatawny?" Mulligatawny, who is a married man,

keeps three horses since his staff promotion, one for his children's gharrie, and a pair to take Mrs. M. to the band in the evening, replies, "Why, yes, a little; I've kept horses the last two and thirty years, and ought to know something about them." (Oh! fie, Dr. M., you know you only kept a pony for the first seven years of your griffinage, and it was on your getting a regiment as assistant-surgeon that you sold the pony and bought a horse warranted by Ramasawmy perfectly sound, and quiet to ride and drive in single and double harness, and to carry a lady. Don't you recollect when you pointed out that swelling under the near knee to Ramasawmy, and said he could not do *you?* You knew what a spavin was when you saw it!)

President.—"I wish you would ask Mr. Caustic a few questions." M. clears his throat, and asks the "Young Vet." how he could account for a horse that had a worm in his eye going weak in the loins. Our young friend answers, he never knew it to be the case himself; there could be no connection between the two maladies; one was in the head and the other near his tail; he had heard such a thing spoken of before at mess one night, but he never met any one who had seen it. It was a thing he would give every attention to when he met with a case, but he must be allowed to doubt, and to treat it as a popular error till he was convinced of the fact from personal observation. Here Dr. M. angrily says he must not call what was a well-known fact a popular error.

Morecroft Brown comes to our young friend's assistance, and says that during his thirty-three years' Indian experience he *never once* met with a *single case* where the two affections had been seen together; and even if he had met with one or two cases this would not be proof sufficient to establish it as a fact, in the face of some hundreds he had seen destroyed for weak loins that had never had a worm in the eye.

Doctor M.'s next question was how he could account for geldings being proof against weak loins. Our young friend answered, with a smile, that "Mr. Brown had a *gelding* destroyed only a few days before for being weak in the loins."

Dr. M. suggested that some other member should question our young friend; but there being no volunteers, the president again remonstrates on the absurdity of such a board, and asks Coleman Moorcroft Brown to put a question, so that they might be able conscientiously to put their names to the proceedings. C. M. B. asks the distinguishing

features between colic and enteritis. This being satisfactorily answered, Dr. M. is seen writing something in his pocket-book under cover of the table. Some ill-natured member says that question and answer have been noted down to make use of on another occasion. Be this as it may, they all express their satisfaction, and sign the proceedings.

A month after, our young friend is on his way up the country to take charge of a battery. He was not long left there in peace ere he was sent some 400 miles back to take the temporary charge of a regiment of light cavalry, the veterinary surgeon of which went on two months' privilege leave to the hills, sick, and it was thought he would have to go home. This, however, did not happen for some eighteen months later. In the meantime he had to go back to his battery, chapfallen, with an attack of fever, from exposure while travelling, and an empty purse. He is rewarded eventually by getting the —— regiment of cavalry, the one he did duty with for two months, the veterinary surgeon having been ordered home, sick. He now writes to his presidency tailor for a complete cavalry kit; but is refused, because the instalments for the former have not been regularly paid. We must not, however, blame our young brother; he had heavy expenses, marching and counter-marching, and the greater part of his baggage was lost whilst crossing a river during the monsoon. He soon finds another tailor, anxious to take his order, under promise of a certain monthly instalment being paid. His cavalry kit arrives, and he finds himself debited with 2000 rupees. He now buys his chargers; not costly ones, 'tis true, like Cornet Jones's or Captain Smith's, but they are good, sound, serviceable nags, and do his duties well. He is very much liked in the regiment; Jones says "He is a devilish good, gentlemanly fellow, but deuced slow." Smith says, "That's not his fault; he is very poor, but will be better when he is out of debt." Alas, poor young friend! you have your first and second tailors' bills yet to pay, your chargers, your buggy, and horse to buy, and your house yet to furnish. Our young friend is not extravagant; he is not mean: here is his promised "little bill:"

Pay and Indian allowances . . .	154	15	10	
House rent	25	0	0	
Horse allowance	60	0	0	
Tentage	50	0	0	
Conveyance allowance (only drawn when passed examination in the language . . .	30	0	0	
Medicine allowance (for country medicine) about .	80	0	0	
				399 15 10

Brought forward . . .					399	15 10
CONTRA.						
Mess bill, including mess and band subscription, share of mess guests, wine bill, billiard-table subscription, &c. &c.	150	0	0			
Medical fund	24	0	0			
Servants	60	0	0			
Breakfasts and luncheons at home . . .	20	0	0			
House rent (at least)	30	0	0			
Butler's bill for keep of three horses, including shoeing, wear and tear of clothing and gear .	25	0	0			
Butler's bill for household articles, candles, oil, and numerous et-cæteras	20	0	0			
				329	0	0
Balance left . . .				70	15	10

Thus we find him left with a balance of seventy rupees a month, in English money £7. He must pay his tailor at least fifty rupees, or violate his promise. It will take him three years and four months to pay this bill, and in the meantime he has twenty rupees, or £2, left to pay for his chargers and buggy and horse. It cannot be done on this, and *here* begins his real troubles. He obtains a loan of 5000 rupees from the Agra or some other bank, or perhaps the sowcar of his regiment (an Oriental Shylock attached to every regiment in India). If from the sowcar, he pays from eighteen to twenty-four per cent. interest per annum; but the bank rate, together with money sunk in a life policy, makes it pretty nearly on a par. He is now tied to the country; he cannot go home till the whole sum is paid off; his buggy and horse are sold to reduce his expenses; he finds he cannot afford to drink wine at mess and pay 100 rupees a month towards the disbursements of the loan; he has managed, by dint of pinching himself, to reduce his establishment and mess bill and to pay regularly his 100 rupees to the bank.

> "Happy's the man who lives on his pay,
> And spends half-a-crown out of sixpence a day,"

says the old song.

Our young friend has been paying off his loan for the last four years and upwards, but to do so he has been obliged to make use of the sowcar occasionally. His long marches, and the expenses consequent thereupon, such as the purchase of tents and carriage for the same, the loss by the sale of his furniture and purchase of fresh at a heavy premium, all this has thrown him into difficulties; he misses his punka,

coolies, and other little luxuries, which cease to be such, and are really necessaries in this delightful climate, and the consequence is his health has failed, and he has been sent to the hills for change of air. Home is out of the question. All this cannot be done out of his pay, and put by 100 rupees a month for the bank; the sowcar is consequently again called in, with his twenty per cent. usury; the doctor says he must take wine, and he thus contrives to pay off one debt by making another, and so he goes on to the end of the chapter.

Should death cut him off in debt, his life is insured, and the securities saved. The sowcar lays claim to his *property*, horses, kit, furniture, &c.; and should it only realise half the claim, he is well paid.

Our young friend, who has of late years grown morose, and gray about the temples, is buried with military honours; the band plays the 'Dead March in Saul,' a volley of carbines is fired over his grave, and the band returns playing a lively air. His brother officers are sad at mess that night, but the next day he is forgotten. A week after, Cornet (now Captain) Jones says, "Who is going to poor Caustic's sale?" Major Brown, who has now grown a fat, jolly major, says, "Oh! there is nothing there; he only left two chairs, a table, a cot, a looking-glass, and a few old volumes of the *Veterinarian*."

Thus ends "Our Young Vet." He is replaced by another, who follows pretty nearly in his footsteps. "Such is life;" at least, for veterinary surgeons in India.

I know I am trespassing largely on your pages, but do hear my growl a little longer, while I offer a few words of advice to the aspiring army vets.

Young gentlemen, content yourselves at home, with the smallest practice, rather than enter the army. It is a myth, a delusion; and all are the same out here, both Queen's and locals.

The Royal Warrant is ignored, and you must go back from eleven shillings a day to eight. Your expenses are *more* than I have given in the "little bill." I have drawn it out on *the minimum* scale, and have given the "Young Vet." a regiment of cavalry, where he draws about double the sum for medicine allowance than he would with troop or battery of artillery. I have likewise given him credit for passing in the language, and for drawing £3 a month more than he would had he not passed. I have not charged for his moonshee, or teacher of languages; and were I to sum up all the et-cæteras necessary to existence in this country, the "Young Vet." would not have £7 a month to pay for his horses, tents, furniture, kit, &c. &c.

Parents and guardians, persuade your sons and wards from falling into this yawning gulf of poverty and misery! Students and young veterinary surgeons, have you forgotten the noble examples of your cousins, the medical students of England? Did they not convene a meeting during the Russian war, and pledge themselves not to enter the royal navy till their pay and position, as assistant-surgeons, were bettered? Were they not supported by their professors and the leading medical men of the country? And did they not keep their pledge and gain the victory?

It has just struck me that I have omitted a large item in the "little bill," viz., the cost of country medicines. This is from thirty to thirty-five rupees a month, leaving the "Young Vet." in a less enviable position than I have already given him.

Reiterating my regret at the length of this letter, I will conclude, merely observing that such a Board really did assemble, as I have described, to examine a veterinary surgeon, and the absurd questions I have given were really asked. This I have from *most reliable* authority, and it argues strongly the necessity for a head to our profession in each presidency. Anxiously waiting the next number of the *Veterinarian*,

I remain, dear sirs,
Yours faithfully,
"The Ghost of an Indian Vet."

To the Editors of 'The Veterinarian.'

RUPTURED STOMACH OF A HORSE.

By J. Coe, M.R.C.V.S., Stoke-upon-Trent.

The animal from which the ruptured stomach I have sent you was taken was a valuable five-year-old horse, of the light cart-breed. The owner requested me to attend the horse on the night of the 13th ult., about 9 p.m., informing me the animal had been taken ill, as if suffering from colic, about 4 p.m. the previous day. Nothing was done beyond rubbing him with a wisp of straw for about half an hour, when, to all appearance, he suddenly became easier, but in a little time he made an attempt to vomit, which was followed by an ejection of fluid down the nostrils, and this I was informed he had repeatedly done at intervals during the

night and following day. Upon my arrival, at 10 p.m., I found my patient in a very dejected condition; the head pendant between his fore legs; the surface of skin in patches of cold perspiration; the extremities also cold; the pulse almost imperceptible, and running down; the visible mucous membranes pale in colour; a peculiar quivering of the cervical portion of the panniculus, and frequent attempts made to urinate. While I was present he also made two or three efforts to vomit, when he voided by his nostrils a large quantity of pale-coloured fluid, of an extremely acetous odour, after which he became tranquil for a few seconds, and drank a little meal and water that was offered to him. Soon after he became very restless, and trembled violently, but did not lie down nor sit on his haunches. I came to the conclusion that it was a case of rupture of some portion of the alimentary canal, most probably of the stomach, and at once told the proprietor I considered it a hopeless case, and prognosticated a speedy death. He, however, urged me to do something for the poor animal, and to pacify him I with difficulty administered a mild stimulant in the form of draught, when the pain became more violent, and the animal died in about half an hour from my arrival.

Upon inquiry, I ascertained that the horse had had several slight attacks of colic during the last six months, but these had passed off without assistance, and the owner thought this would do the same.

Post-mortem examination, twelve hours after death.—On cutting through the abdominal parietes, a large quantity of ingesta was seen free in the peritoneal sac. Upon searching for the stomach, I found it extensively ruptured, and perfectly empty, the omentum being covered with its contents. The intestines here and there presented a slight inflammatory blush. The anterior lobe of the right lung was highly congested. The heart was normal, but the blood throughout the body was fluid, dark coloured, and of the consistence of treacle.

I fear the parts will be found by you much decomposed.

ENORMOUS TUMOURS IN A COW.

By R. S. Reynolds, M.R.C.V.S., Mansfield.

A *post-mortem* examination of a case that had been for some time under my care revealed the following extraordinary phenomena, an account of which you may not deem

unworthy a space in the *Veterinarian;* not because of the rarity of the occurrence, but on account of the size of the abnormity.

The subject in question was a well-bred cow, the property of the Rev. J. L. Prior, of Linby, and she had, up to a few days previous to my attention being directed to her, been apparently in good health.

My prognosis was unfavorable, but at the owner's request the animal remained under treatment until she died.

A section through the abdominal parietes was not followed by protrusion of any of the normal viscera of the abdomen, and nothing was to be seen upon reflecting back the muscles, &c., but a huge mass, of a grayish-brown colour, which proved upon closer inspection to be three immense tumours, two of which were attached to the uterus and one to the rumen. They were alike in composition, resembling glandular structure upon incision, but they could easily be torn with the finger, and disseminated through their substance were several cysts, containing each from a pint to a gallon of a sanguineous serum. Curiosity compelled me to determine their weight, and, incredible as it may seem, they collectively weighed the enormous amount of more than twenty stones.

CASE OF PURPURA HÆMORRHAGICA IN A HORSE.

By J. Steele, V.S., Belford.

On the 24th of November, 1862, I was requested to visit a draught-horse, four years old, the property of Mr. George Chisholm, farmer, Elwick. I accordingly attended, and found the patient scarcely able to move; the extremities were very much swollen, and a large swelling existed on the abdomen, extending from behind the fore legs to about the sheath; the breathing was a little accelerated; the pulse 90.

The owner, thinking it was the result of grease, had given a diuretic ball the day previous. I ordered a laxative, and had the swollen parts well fomented with hot water, the body clothed, the legs bandaged, and directed the diet to consist of barley mashes and thin oatmeal gruel.

November 25th, 10 a.m.—The animal I found to be much the same as when I left him the night previous. Administered—

Pulv. Potass. Nit., ʒiv;
Ferri Sulph., ʒij;
Camphor, ʒj;

in a ball; and left another to be given in the evening.

26th.—Animal a little better. He partakes of a little of the mash, and drinks a good deal of gruel; pulse 65. Medicine repeated.

27th.—Patient still improving; pulse 54; he is also able to move about his box, and the extremities are less swollen.

28th, 5 p.m.—On my arrival this afternoon the owner told me that he thought his horse was dying. I could hear him breathing about twenty yards from his box. He also told me that the breathing first became accelerated on the night of the 27th, and it continued to get worse up to the time I saw him, on the 28th, when I found him standing with his head stretched out, and his fore legs placed wide apart. The breathing was most painful to hear; the head, throat, lips, and tongue, were very much swollen, and the thighs were so much enlarged that I could with difficulty pass my hands between them. There was likewise a quantity of serum oozing through the skin, and bloody mucus trickling from the nostrils. I tried to administer a ball, but he was unable to swallow it. I therefore had him blistered from the throat to the sternum, and on each side of the chest, with liquid blister; pulse 100.

29th, 9 a.m.—On my arrival I found the horse down; his legs stretched out; pulse so feeble that I could not take it; ears and extremities deathly cold; but the breathing was a little easier. Although I had no hope of his recovery, yet I was very unwilling to give him up, so I raised his head, and administered the following draught:

℞ Ether. Sulphuric.,
Ol. Tereb., āā ʒiij.

When I had given him about the half of it he tried to get up, but in vain. I gave him the other half, and he got up with a little assistance. I ordered him to have anything he could eat or drink.

30th, 2 p.m. — Pulse 80. He seems to be a little better; the breathing is not so laborious, and he eats a few dry oats and drinks a good deal of water; much serum escapes by the skin. I again administered half of the above-named draught, and ordered the legs to be well hand-rubbed, and the bandages replaced.

December 1st.—The pulse has fallen to 60; the swellings

are greatly reduced, and the horse can now move about his box, but there is some appearance of sloughing of the integument. The trickling of bloody mucus from the nose has stopped; the appetite is still improving, and the eye brighter. Continue the medicine.

2nd.—The pulse is about the same as yesterday, and the swellings seem to be still diminishing. He prefers dry corn and hay to anything else. I dressed the sloughing parts with a weak solution of Plumbi Acetas, prescribed internal medicine as before, which was repeated daily until the 6th, when he was so much improved that I ordered the medicine to be discontinued, and directed him to have plenty of good food.

I saw the owner about three weeks ago, when he said the horse was now working every day, and doing well.

Facts and Observations.

ROYAL SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS.—The following communication has been received by the president of this society:—"Marlborough House, May 7th, 1863. Dear Lord Harrowby,—I have the honour to acknowledge the receipt of your communication, submitting, as president of the Royal Society for the Prevention of Cruelty to Animals, the request of the committee that their Royal Highnesses the Prince and Princess of Wales would honour the society with their names as patrons; and I am desired by their Royal Highnesses to state the pleasure it gives them to accede to this request, and to add the high opinion they entertain of the merits of the society, and of the beneficial results that have attended its exertions in this country, and the noble example which it has set to other nations.—I have, &c., W. KNOLLYS."

POISONING OF A FLOCK OF SHEEP.—A curious case of poisoning, by which a flock of sheep was destroyed, has been communicated to the French Central Society of Agriculture. Sulphuric acid is used in the maceration of the pulp of beetroot, but a farmer who fed his sheep with that vegetable thought fit to add four litres of sulphuric acid and 1800 grammes of sulphate of iron to every 1000 kilogrammes of beetroot. The sheep who ate of the pulp thus

prepared shortly became sick, and many of them died. On being opened by a veterinary surgeon strong traces of violent inflammation were visible, and the entrails having been subjected to a chemical analysis it was ascertained that death was caused by the presence of sulphate of iron in the pulp. No doubt could be entertained on the subject, as other sheep, fed on beetroot-pulp, to which no sulphate of iron was applied, continued to be perfectly healthy. It is believed in some agricultural districts that sulphate of iron acts more powerfully on sheep than on oxen. The veterinary surgeon who was employed to examine the sheep poisoned observed in the same farm that cows had eaten with impunity of the same beetroot-pulp which had poisoned the sheep.

Alcohol obtained from Coal-gas.—In the International Exhibition, French Department, there was exhibited a litre of alcohol, produced by M. Bertholet from the elements of coal-gas, or rather olefiant gas, one of its constituents. The manner in which the conversion was effected was as follows:—M. Bertholet introduced into a flask twenty-six litres of bicarburetted hydrogen, a quantity of concentrated sulphuric acid, and three kilogrammes of mercury. These he agitated together for a considerable time, and after about 53,000 agitations he found that the whole of the gas was absorbed by the acid, producing a new compound, to which the name of sulpho-vinic or sulpho-ethylic acid was given.

On treating this acid with water, a new reaction was set up; the bicarburetted hydrogen set at liberty combined in its nascent state with the water, forming alcohol, leaving the sulphuric acid in a diluted state, from combination with a certain quantity of water. The alcohol thus formed was obtained from the liquid by distillation.

Since this successful experiment was performed by Bertholet, M. Cotelle has really obtained alcohol from coal-gas, and the expense of its being manufactured thus is the only barrier to its general adoption.

Differences in the Temperature of the Air.—At the last sitting of the French Academy of Sciences M. Becquerel communicated further researches of his on the temperature of the air at a great height, compared with that of the superficial strata in contact with the earth's surface. These researches, conducted with both the electric and common thermometers, led to the following result.—That

every place on the globe has two different mean temperatures, one independent of terrestrial radiation, the other entirely dependent upon it. The latter M. Becquerel calls "climateric," because it serves to characterise the climate with regard to temperature. The former, which is obtained by placing thermometers at a certain height above the ground, varies with the latitude; the other is obtained by taking the average of observations made at different points of the place experimented on. In England, where the quantity of rain is about the same in each season, the difference between the two temperatures is zero. In Germany and Sweden, where there is more rain in summer than in winter, springs have a higher temperature than the average of the place; in Norway and Italy, where winters are rainy, the temperature of springs is lower.

Formation of Hippuric Acid.—The production of *Hippuric acid*, the presence of which characterises the urine of the Herbivora, is due to the large quantity of carbon contained in their food. It, however, like urea, is not formed directly from the food, but is a result of the metamorphosis of the nitrogenous tissues.

Its existence in urine is proved by evaporating it to one third of its bulk, and then adding hydrochloric acid. In a few hours linear and branch crystals will appear.

Test for Bile-acids.—The editor of the *Chemical News* says, that the simplest way to test for bile-acids in urine is to put about a couple of drachms of the urine into a test-tube, drop in a fragment of white sugar of the size of a pea, and then add slowly, by pouring down the side of the tube, a drachm of strong sulphuric acid. If bile-acids be present, a fine violet or purple colour will be produced at the line of contact of the urine and the acid; if absent, only a browning of the sugar will be observed.

Uses of Petroleum.—Mr. Holmes states that the crude oil preserves wood for all time; the Indians bathe in it to heal wounds; that it may be burnt in locomotives to generate steam, cotton waste being placed on the furnace bars, and the oil dropped on it by proper contrivances; it is the cheapest known agent for the production of light; that with care the process of rectification is perfectly safe; one of its products—benzine—is a substitute for oil of turpentine, and the heaviest oil is an excellent lubricator.

THE VETERINARIAN, JUNE 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

ANNUAL MEETING OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

We make no apology for occupying so large a portion of our present number with a Report of the Proceedings of the Royal College of Veterinary Surgeons, for they will doubtless be read with much interest by every member of the profession. We trust we see in these proceedings, as a whole, the dawn of a period when all strife shall cease, and division among us be unknown, and when all shall labour, each in his own way, to promote the general good. Difference of opinion, as well as diversity of action, when founded on right principles, is to be desired rather than otherwise, for in these we have an earnest of success. Many men require the stimulus of opposition to keep active their own good powers; but that which we have ever condemned, and shall still continue to do, is factious antagonism. We will not, however, dwell on so uninviting a theme, but at once congratulate the Council on the efforts it has made to ensure unity among us. We can also congratulate them on the improved *report* of their proceedings during the past year, which they have sent forth to the public. The profession at least is now enabled to learn something of what has been done by its executive, which can only tend to give it an increased interest in the working of its charter of incorporation. Much more remains, however, to be accomplished before the profession will feel that amount of interest it ought in its own position, or occupy its right place among the institutions of the country. The Council has no power to effect this; and we hope to see that during the forthcoming year no effort is spared to make more public, and also to identify more closely, the science of veterinary medicine with the kindred sciences of our day. As the guardian of the rights, privileges, and dignity of the profession, the members expect nothing less of its Council.

REPORT.

The annual meeting of the members of the Veterinary profession was held on Monday, the 4th of May, at their College, Red Lion Square, the President, Professor J. B. Simonds, in the chair. Among those present were, Professors Spooner, Brown, and Gamgee, the P. V. Surgeon to

the Army, J. Wilkinson, Esq., Messrs. W. J. Anderton, C. M. Baker, H. T. Batt, E. Braby, T. D. Broad. J. C. Broad, S. L. Buckley, W. Burley, T. Burrell, jun., T. A. Byron, B. Cartledge, W. H. Coates, W. Dale, James Darling, Charles Dickens, G. A. Drewe, John Ellis, William Ernes, W. Field, jun., A. Gaskin, W. J. Goodwin, James Hall, John Hanley, M. J. Harpley, J. B. Henderson, R. L. Hunt, Thomas Jex, John Lawson, C. Lowe, Daniel McLean, James Moon, J. Moore, jun., Richard Pritchard, William Pritchard, Henry Peele, William Robinson, William Rogers, James Rowe, C. Secker, F. R. Silvester, E. Stanley, Samuel Tremlett, Walker Watson, John Wiggins, William Wilson, Joseph Woodger, Joseph Woodger, jun., and Edward Woodger.

The *Secretary*, Mr. Coates, read the advertisement convening the meeting, and also the minutes of the previous meeting, which were duly confirmed.

The following report of the Council was then read:

Report of the Council of the Royal College of Veterinary Surgeons, for the Year 1862-3.

The official events of the last year have not been either very numerous, or of great magnitude, yet they will be found to be interesting to the Members of the Royal College of Veterinary Surgeons, and tend to show that the Council has not been unmindful of the well-being of the Veterinary Medical Profession, nor lax in its endeavours to utilise the opportunities which have seemed favorable for promoting the material interests and advancing the social position of the Body Corporate. And although the solicitude which the Council has felt, and the exertions which it has made, have not been attended with complete success, it is, nevertheless, not without hope of hereafter obtaining more favorable results, by a judicious perseverance in the course which the necessities, and, perhaps, it may be urged, the rights of the Profession so clearly point out.

In the early part of the year steps were commenced for readjusting the *modus operandi*, by which the section of the Board of Examiners for Scotland had hitherto exercised its functions; and the Council is sanguine that the alterations which have been made will prove satisfactory, inasmuch as it has been able to make concessions without either abridging its power or sacrificing any fundamental principle.

At the first Meeting of the year the Council proceeded to the election of its office-bearers, when Professor J. B. Simonds was elected President, and Professors Dick and J. Gamgee, with Messrs. M. J. Harpley, W. Goodwin, J. S. Gamgee,

and T. R. Gowing, were chosen Vice-Presidents. Mr. W. H. Coates was also elected Secretary and Registrar.

The most important event of the year is the attempt which was made to obtain from Parliament an immunity in favour of the Members of the Royal College of Veterinary Surgeons respecting service as Jurors. The time which the Council had at its disposal was very limited, nevertheless a petition to the House of Lords was carefully prepared, embodying a clause praying for such an exemption to be added to a Bill then before Parliament. It was presented to the House by Lord Portman, and supported by many of the Lords. The Bill thus amended was passed and sent down to the Commons, where, on a division, the votes for and against retaining the clause were equal. It is to be regretted that the casting vote of the Speaker was, however, adverse, and the clause was consequently struck out of the Bill.

This disappointment has not destroyed the Council's assurance in the justice of the cause, but will, on the contrary, lead to renewed exertions and more matured organization on a future occasion.

During the *interregnum* which took place between the retirement of the late Secretary and the appointment of his successor, the arduous duties of the office were voluntarily performed by Mr. Braby, the Treasurer; and the Council, thinking it would only be carrying out the wishes of the Body Corporate by offering a material acknowledgment of its obligations to that gentleman, presented him with a testimonial consisting of a silver tea-service.

The Council, ever anxious to give prominence to the Royal College of Veterinary Surgeons, as one of the institutions of the country, has deemed it advisable that the publishers of various directories should be supplied with correct lists of the members of the College.

A new and revised edition of the Register has been published, to which is added a County and also an Army List. These additions will doubtless meet with the approbation of all who are interested in, or affected by them.

During the year a Committee of Inquiry has, with much difficulty, been able to prepare a statistical report, by which it will be seen that a vast amount of practice is still in the hands of unqualified practitioners, leaving the Graduates of the Royal College of Veterinary Surgeons in a great minority.

The statistical returns up to the present time show that the number of Members of the Royal College in practice in the United Kingdom is only 1018; while the number of

those who assume the title of Veterinary Surgeon is 1244, and those practising as Farriers, 1189.

The following is the return furnished by the Committee :

	Members of the R.C.V.S.	Assuming the Name of Vet. Surgeon.	Farriers, &c.		Members of the R.C.V.S.	Assuming the Name of Vet. Surgeon.	Farriers, &c.
Bedfordshire	4	13	7	Norfolk	38	45	41
Berkshire	14	21	19	Northamptonshire .	8	12	24
Buckinghamshire...	11	13	17	Northumberland ...	16	—	—
Cambridgeshire ...	10	12	32	Nottinghamshire ...	22	12	26
Cheshire	16	12	6	Oxfordshire	6	5	4
Cornwall	4	21	11	Rutlandshire	2	—	—
Cumberland.....	9	7	10	Shropshire	16	27	69
Derbyshire	19	35	29	Somersetshire	26	31	50
Devonshire	23	33	35	Staffordshire.....	24	11	31
Dorsetshire	5	25	14	Suffolk	24	60	44
Durham	14	16	15	Surrey	25	13	16
Essex	22	54	13	Sussex	17	51	11
Gloucestershire ...	13	30	43	Warwickshire	27	23	32
Hampshire	15	16	12	Westmoreland	1	—	—
Herefordshire	6	10	36	Wiltshire	12	18	21
Hertfordshire	14	20	14	Worcestershire ...	11	11	32
Huntingdonshire ...	8	16	9	Yorkshire	70	104	141
Kent	23	36	28	WALES	10	7	16
Lancashire	62	101	29	IRELAND	36	18	11
Leicestershire	22	24	29	SCOTLAND.....	164	84	57
Lincolnshire	41	74	101				
Middlesex	103	112	52				
Monmouthshire ...	5	11	2	Totals	1018	1244	1189

The number—1244—who unscrupulously assume the title which the possession alone of the diploma ought to confer, by calling themselves "Veterinary Surgeons," affords a striking corroboration of the well-founded and long-entertained assurance that the profession requires some legislative support.

The Council, therefore, suggests the propriety of each Member of the College giving practical effect to the working out of this *desideratum* by inviting the co-operation of his representative in Parliament.

A Committee has been appointed for the purpose of preparing a Petition to Parliament, with a view to obtain an Act for the better protection of the Members of the Body Corporate, and also for obtaining for them the immunities and exemptions to which they deem themselves justly entitled.

Scientific works have been presented by Professors Brande,

Taylor, and Simonds to the Library, and also Reports from the Veterinary Institution of Saxony.

The following address of congratulation to the Queen, on the marriage of His Royal Highness the Prince of Wales, has been transmitted to the Right Honorable Sir George Grey, the Secretary of State for the Home Department:

"To the Queen's Most Excellent Majesty.

"May it please your Majesty,

"We, the President, Vice-Presidents, and Council of the Royal College of Veterinary Surgeons, desire humbly to approach your Majesty, to express our heartfelt congratulations on the Marriage of His Royal Highness the Prince of Wales with Her Royal Highness the Princess Alexandra of Denmark.

"We earnestly pray that this auspicious event may conduce to the personal and domestic happiness of your Majesty, and that, under the all-powerful influence of your Majesty's example, it may also ensure the fulfilment of the sanguine and well-founded hopes of a loving and devoted people.

"Given under our common seal, this 10th day of April, 1863.

(Signed) "JAS. B. SIMONDS, *President*."

The following reply to the address of congratulation has been received:

"Whitehall;
"23*rd April*, 1863.

"Sir,

"I have had the honour to lay before the Queen the loyal and dutiful Address of the Royal College of Veterinary Surgeons on the occasion of the Marriage of His Royal Highness the Prince of Wales; and I have to inform you that Her Majesty was pleased to receive the Address very graciously.

"I am,
"Sir,
"Your obedient servant,
"G. GREY.

"*The Secretary to the*
"*Royal College of Veterinary Surgeons*."

It will be seen by the Financial Statement which is annexed, that unusually heavy disbursements have been made during the year, but these being exceptional, they will not ultimately affect the state of the finances of the College. The balance in hand, after defraying the expenses of the year, is £297 14*s*. 1*d*.

From the Registrar's Report it appears that the number of deaths recorded during the year has been 19; and that 71 pupils have obtained the Diploma of the Royal College of Veterinary Surgeons during the same period.

E. BRABY, TREASURER, *in Account with the Council of the Royal College of Veterinary Surgeons*, APRIL, 1863.

Dr.

	£	*s.*	*d.*
Balance at Bankers', April, 1862	391	6	0
Examination Fees	542	17	0
Cheque per Treasurer	13	13	0
Copies of Register	0	8	0
Interest	5	5	1
Income Tax returned	2	5	0
	£955	14	1

Cr.

	£	*s.*	*d.*
Examination Fees and Expenses	250	19	10
Rent	60	0	0
Rates and Taxes	31	5	8
Allowance to E. N. Gabriel	50	0	0
Salary to Secretary	62	10	0
Advertisements	11	0	7
Printing	44	16	0
Diplomas	4	2	0
Insurances	4	14	3
Coals, Gas, and Wood	10	5	3
Illumination	2	12	1
Stationery	5	14	6
Law Expenses	4	9	4
Library	6	4	3
Museum	0	9	6
House Repairs	3	5	6
Wages	20	0	0
Petty House Expenses	35	10	8
Testimonial to Mr. E. Braby	50	0	0
Balance at Bankers'	297	14	8
	£955	14	1

We, the undersigned, have examined the above accounts, and found them correct,

April 14*th*, 1863.

ALFRED JOSIAS ROGERS,
CLEMENT LOWE, } *Auditors.*

On the motion of *Mr. Broad*, seconded by *Mr. Watson*, the report was received.

Professor Brown moved the adoption of the Report, which was seconded by *Mr. Batt*.

Mr. Ernes said he wished to make some remarks on the statistics contained in the Report. Two years ago he first brought the matter before the annual meeting, and pointed out to the Body Corporate the awkward position in which the veterinary profession then stood. He was sorry to say it had not since been ameliorated. There were many members who had passed the examination since that time, and he regretted to add they were not dispersed over the different counties where the number of certified members was small; for he saw by the advertisements on the cover of *The Veterinarian* that there were several applying for situations as assistants. It appeared from the Report that the country was really badly provided with veterinary surgeons. In some counties there were only four, and in others six. The number of duly qualified veterinary surgeons was, no doubt, correctly given; but it was not likely that they had a complete return of those who falsely assumed that title, and who, he had no doubt, were double the number stated in the report. The question arose as to how this evil was to be remedied; for unless some means were found to check it, and to protect the members, the veterinary profession must ultimately come to a standstill. It had been stated that they ought by education to show the superiority of the members, and thus drive the quacks out of the field; but in order to do that the students must be assured of finding the means of existence. If they could not find any other protection, they ought at least to ask from the legislature that those who had not passed the college should not assume the name of veterinary surgeons. But he thought that something more than that might be done. It was much to be regretted that in a country where the domestic animals were so numerous and valuable, and so much improved in breed, such a state of things should exist. It was incumbent upon the members of the Body Corporate to interest themselves in the matter, so that they might obtain some legislative enactment that would place the profession in a better position.

Mr. Robinson thought the proper remedy would be found in multiplying the members of the profession. So long as they were in the minority in point of numbers, they must expect to find persons assuming the name of veterinary surgeons who were not members of the college. Supposing an Act of Parliament passed for the purpose of putting

down unqualified persons who had to supply their places, they ought not to complain of farriers pursuing their occupation, but to set to work to send a better class of men into the country.

Professor Gamgee said that many years ago he contradicted the statement that the profession was over-stocked, and showed by statistics that instead of there being, as in some countries, one veterinary surgeon to thirty-five square miles of surface, there was in England only one to 250 square miles, notwithstanding the larger proportion and value of stock in relation to area. The want had evidently been felt; and accordingly it would be noticed that the college had had annually more students to educate, and more members to qualify, so that to a certain extent a remedy was being gradually created. There was one remark he wished to make upon the distribution of veterinary surgeons over the country. It was a fact too painfully known to many of the members, that within the last fifteen years contagious epizootics had raged throughout the United Kingdom, with which the veterinary surgeon could not cope by ordinary remedial measures. Instead of the veterinary surgeon working hand in hand with the farmer to increase the meat supplies in the kingdom, and to enhance the value and position of the stock, the diseased meat butcher was called in; and where the veterinary should be employed to stop disease, animal after animal was sent into the market, so that it was found that not less than one fifth of the total amount of live stock consumed in the country was diseased. It had been his duty to draw attention to the matter in other places, and he was happy to say that the feeling was strengthened that, with the prevalence of contagious diseases, it was impossible to have an increase in the amount of stock throughout the kingdom. They ought all to act as one man for the prevention of these epizootics. Twenty-five years ago, when they were unknown, every one was speaking of the practical value of veterinary surgeons. The late Mr. Youatt worked very hard to get a professor of cattle pathology appointed at the college, and at last succeeded; but, unfortunately, the epizootics had, to a great extent, neutralized the advantages of educating veterinary surgeons, and there was no doubt that killing diseased animals out of a farm had become far too much the practice instead of curing the disease; so much so that veterinary surgeons often felt themselves bound on going into a farm to say, "You had better slaughter that animal; I can do nothing for you." He thought that something should be done to put a stop

to the constant influx of these plagues, which were invariably passing from east to west, but never originating spontaneously in this country. There were many places where animals were dying at the rate of from 30 to 60 per cent. per annum, and the veterinary surgeon was never called in. In some places where he went to examine the stock, he found individuals administering tincture of aconite, and quacks, or dairymen, dosing animals with poisonous drugs. The farmers, in fact, would not pay the veterinary surgeon's bill, but would rather take the ready cash of the butcher.

The President remarked that it was not a part of the duty of the profession to interfere with the importation of animals from abroad.

Professor Gamgee thought it was the duty of the profession to put a stop to the traffic in diseased animals. Some persons considered that the more disease there existed the better off the members of the profession would be. He totally denied the truth of that statement. The interests of veterinary surgeons were identical with the interests of the public. He was afraid that Parliamentary restrictions could not be easily obtained; he believed their duty was to produce more veterinary surgeons, and to impress upon them the importance of urging all over the country the prevention of disease.

Professor Brown said that the insufficiency of veterinary surgeons in the country constantly came under his notice. It had occurred to him whether a committee of the council might not be appointed to direct the placing of the members whom they passed in certain localities. He knew many districts still remaining perfectly unoccupied. In Gloucestershire there was an excellent opportunity for a young man just starting in practice, who would be received in the most friendly spirit by those needing his professional services.

Mr. Ernes said that the existence of so many unqualified practitioners was very disheartening to the legitimate veterinary surgeon. It often happened that, when businesses were advertised for disposal in the country, and the returns came to be examined, extending perhaps over a large tract of country, they did not amount to more than £200 or £300 a year; and it was not likely that they could get men who would devote themselves to veterinary studies, and give the necessary time for obtaining a diploma, with such a prospect before them. The profession ought not to have to contend against unqualified persons; and if it were properly protected there would be at once an influx into the profession of men of better education.

Mr. Goodwin said that although he was not in practice he still took, as he always should do, a great interest in everything that belonged to the profession. He recently read in the newspaper a leading article consisting chiefly of quotations from statements by Professor Gamgee, in which reference was made to the mortality of animals from splenic apoplexy, and it was stated that so virulent was the disease that even a few drops of blood in a bowl of water lapped up by a dog would cause certain death. He had been asked by several persons what was splenic apoplexy, and he confessed that he was unable to answer the question. It had been stated that it was the same as the German miltzbrandt. He (Mr. Goodwin) had always understood that that was a perfectly distinct disease. A good deal had been lately said, also, about "ovine smallpox." Having recently read an excellent French veterinary work on the subject, he found that the malady had been well known in France for more than 200 years, and that although the symptoms somewhat resembled smallpox, the two diseases were essentially different, it being stated that smallpox could not be produced from the virus taken from the affected animals. He recently read a paper communicated to the Royal Society in 1804, by Sir Joseph Banks, who stated what might be expected some day or other if we did not prevent the importation of diseased animals into the country; and who likewise stated that the two disorders to which he had referred ought not to be confounded. He did not comprehend how English veterinary professors, after all the information previously given upon the subject, should take upon themselves to throw it aside, and call the disease that had recently appeared smallpox.

The President said that was not the proper time or place to discuss a scientific question. They believed that the name given to the disease was warranted by the progress of the affection, and by the symptoms that were developed; and if the occasion was a fitting one, they would, no doubt, be able to convince Mr. Goodwin that the name was not so inappropriate as he supposed.

Professor Spooner thought that the report should contain some further information on the subject of "the *modus operandi* by which the action of the Board of Examiners for Scotland had hitherto exercised its functions." They were not enlightened as to what the alterations were, and as the subject was one of great importance, every information respecting it should be afforded.

Reference was made in the Report to the attempt to obtain from Parliament certain immunities in favour of the

members of the College, and it was stated that, when the subject was brought before Parliament, the casting vote of the Speaker was against them. It ought to be understood that that was a mere matter of form, and the Speaker personally was in favour of the clause, against which in his official capacity he thought it expedient to vote.

The President said that the members were aware of the state of things that had existed for some time past in reference to Scotland. Parties very strong in power had done all they could to oppose the onward progress of the profession, inasmuch as they had adopted means for bringing into the profession persons who were not members of the Body Corporate. Various suggestions had been made from time to time, with the view of remedying that state of things, and for the last few years there had been a great disposition on the part of those in authority rather to work with the Council than against it. At the same time they were not perhaps free to take exactly the course which they desired; and the Council, believing that conciliatory measures were to be preferred to coercive ones, had thought it right to make some alterations in one of their bye-laws, to facilitate the examination of the pupils of the Scotch schools by the board of the corporate body. The alterations were apparently not very considerable, but, nevertheless, they were found to have a beneficial effect. One alteration was to change the period of notice from fourteen days to seven, and another that of diminishing to some extent the amount of the fee. It was not to be denied that there was a great disposition on the part of gentlemen in the north to object to what they called London centralization. A secretary had accordingly been appointed to act for the Body Corporate, in the examinations for Scotland, and facilities had been given him for transacting the business which would come before the Scotch board. That too had had a beneficial effect, and the result was that a larger number of pupils had entered from the Scotch schools this year than on any previous occasion.

Several speakers had referred to the necessity of increasing the supply of veterinary surgeons, and giving them facilities for obtaining support as practitioners. He was happy to say that no fewer than ninety members had been admitted to the College this year, being one tenth part of the entire number on the register. Their admission would, of course, have an important bearing upon the finances of the College, but a greater one on the standing of the profession. The fees from the persons examined, about a hundred in number, produced an income of upwards of £700.

The motion for the adoption of the report was then unanimously agreed to.

The President stated that the members of Council who retired by rotation were Messrs. E. Braby, T. Jex, F. R. Silvester, C. Dickens, W. Barrow, and B. Cartledge. These gentlemen were eligible for re-election, and offered themselves accordingly; but it was open to any gentleman to propose any other candidate. At the same time he thought that, unless for very good reasons, it would be well for the members not to cast off their old friends, the introduction of "new blood" not having generally proved so very beneficial as could be desired.

The following candidates were then proposed for election:

Professor John Gamgee, by Mr. Wilkinson.
Mr. B. Cartledge, by Mr. Robinson.
„ C. Secker, by Mr. Lawson.
„ C. Dickens, by Mr. Pritchard.
„ Jex, by Mr. Burley.
„ Silvester, by Professor Spooner.
„ Harpley, by Mr. Braby.
„ Broad, by Mr. Batt.
„ Batt, by Mr. Woodger.
„ Stanley, by Mr. Dickens.
„ Braby, by Mr. Ernes.
„ Wm. Barrow, by Professor Spooner.

Mr. Wilson and Mr. Moore were appointed scrutineers.

The scrutineers stated the result of the ballot to be as follows:

Mr. Cartledge, 38; Mr. Silvester, 34; Mr. Braby, 32; Mr. Jex, 27; Professor Gamgee, 27; Mr Secker, 26; Mr. Broad, 20; Mr. Dickens, 18; Mr. Harpley, 13; Mr. Barrow, 10; Mr. Batt, 8; Mr. Stanley, 4.

The President declared the following gentlemen to be elected: Messrs. Cartledge, Silvester, Braby, Jex, Gamgee, and Secker.

Mr. Ernes moved a vote of thanks to the President, who, he considered, had had a very onerous year of office. Things, he said, were in great confusion when he undertook the office; and he had had a great deal to do in setting matters right. He could personally testify to the attention the President had given to the business of the Council, as well as to his courtesy in the performance of the duties of his office.

Mr. Ellis seconded the motion, which was unanimously agreed to.

The President, in acknowledging the vote of thanks, said

he had always received the support and co-operation of the Council; and he felt great gratification in having been the humble instrument in their hands of doing that which was considered necessary for the benefit of the profession under the circumstances that from time to time presented themselves.

The proceedings then terminated.

THE ANNUAL DINNER.

In the evening the members of the profession dined together at the Freemason's Tavern. The President, Professor Simonds, occupied the chair, and was supported on either side by Dr. Sharpey, Dr. Alfred Taylor, Mr. Quain, and Professor Spooner. Among the guests were Professors Brown and Gamgee, and Messrs. W. Barrow, H. T. Batt, T. D. Broad, J. C. Broad, W. Burley, — Burley, junior, Ed. Braby, W. H. Coates, B. Cartledge, W. Dale, C. Dickens, G. A. Drewe, J. Ellis, W. Ernes, W. Field, W. Field, junior, J. Goodwin, J. B. Henderson, W. A. Harber, James Hall, M. J. Harpley, R. L. Hunt, James Moon, John Lawson, W. Rogers, W. Robinson, James Rowe, C. Secker, J. Wilkinson (Principal Veterinary Surgeon to the Army), J. Wiggins, Joseph Woodger, and Joseph Woodger, junior.

On the removal of the cloth, the *President* said the first toast invariably drunk in all assemblies of Englishmen is "the health of the Queen." (Cheers.) I am quite sure I shall only express the feelings of the profession to which I belong when I say that we sincerely sympathise with her Majesty in her retirement, and that we trust the events which have recently taken place will soon bring her Majesty forth again among her people. (Cheers.)

The toast having been duly honoured,

The President said.—Gentlemen, the next toast to which I shall direct your attention is that of "the health of the Prince and Princess of Wales, and the rest of the Royal family." It can hardly be expected that I should say much upon a toast of this kind. It is one which comes home to the heart of every Englishman, for we look upon the Prince and Princess of Wales as "England's Hope." I have no doubt that the education which the Prince has received by the direction of his late lamented father, and also from his beloved mother, is one which is well adapted to fit

him for the distinguished position he will hereafter occupy in this nation. With regard to the Princess, she comes, at any rate, to us as a lady fitted in every way to be the wife of one of England's Princes. I saw the other day mention made of a circumstance which seems to me to speak volumes as to the solicitude which the Queen feels with regard to the Prince and Princess. Very recently Her Majesty paid a visit to the Infirmary at Windsor, for the purpose of seeing an aged domestic upon her dying bed; and she took care in that visit to be accompanied by the Princess of Wales, thereby, I think, setting her one of the best examples, by showing her that the Queen of England was not above going among her people; and not only so, but that she was even anxious to visit her humblest domestic when upon a dying bed. With such an education and such an example before them, we may reasonably hope that both the Prince and Princess are in a fair way of preparation for that distinguished position which they are destined to occupy. I trust, however, that it will be a long time before we shall have to look upon the Prince as King of England. (Cheers.)

The toast was drunk with all the honours.

The President.—Gentlemen, the next toast upon my list is one in which we feel some considerable interest as members of the veterinary profession—"The Duke of Cambridge and the Army." I say we feel some interest in this toast, because you are all mindful of the fact that the army is a means by which very many of the members of our profession find employment, and are introduced into the very best of society. (Hear, hear.) We feel also a deep interest in this toast because many members of the profession, who are not connected with the army directly, are still indirectly connected with it. There are many troops of yeomanry cavalry in different parts of the country, and to each of them, I believe, a veterinary surgeon is attached. We are to-day honoured with the presence of one who occupies a very distinguished position in connection with our profession, as well as with her Majesty service; I allude to Mr. Wilkinson, the principal veterinary surgeon to the army. I also see on my right veterinary surgeons who did honour to themselves during the late war with Russia, while we were for so many months before the walls of Sebastopol. I need not particularise those individuals. But there is one gentleman to whom I cannot but refer, who calls himself a veteran in the service,—our friend Mr. Robinson—(Cheers)—a gentleman, I believe, who has, at any rate, seen as much service, if we may judge from his appearance, as any one now pre-

sent. Whether he has ever been engaged in any severe engagement, of course I cannot take upon myself to say, but I have no doubt if he has ever been placed in such a position that he has been the last to surrender. With regard to the Duke of Cambridge, we know that he does all he possibly can in the position in which he is placed to promote veterinary science. He not only takes care that the different regiments shall, as far as possible, be provided with veterinary surgeons who will do credit to the profession to which they belong, but I may here also remark that he is connected with the Royal Veterinary College as President of that institution, so that we have quite enough to assure us that the Duke of Cambridge takes a deep interest in the veterinary profession. I will call upon my friend, Mr. Wilkinson, to acknowledge this toast.

Mr. Wilkinson.—Having been called upon by the chairman to return thanks for the last toast, all I can say is that he has fallen far short in the expressions he has used, strong as they are, with reference to the feelings with which his Royal Highness is animated towards our profession. I have the happiness of a personal intimacy with his Royal Highness, and I scarcely ever meet him without his asking me how we are getting on; not referring to the army in particular, but to the profession to which he feels that he in some measure belongs as President of the Royal Veterinary College. With reference to the army, I think it is out of my province to say much about it, but I can say, and I am sure I shall be borne out by every one who has seen any branch of our service, that it was never in so efficient a state as it is at the present time. (Hear, hear.) I believe the British army, though not so numerous as the armies of other nations, is in a far more efficient state than any other I have seen; and I believe that this entirely arises from the zeal that animates every individual who is connected with a regiment, or a part of a regiment. The machinery works well, and everybody is anxious to do his duty, not only for his own sake, but for the benefit of the country. With regard to that branch of the army to which I may more particularly allude, the veterinary department, it has its duties to the Queen, and to the country, and to the profession. I believe every one who has watched the career of the veterinary surgeons of the army of late years will acknowledge that we are not falling behind our professional brethren in civil life. It has been my duty, and will continue to be so, to do all in my power to raise the social position of the members of our profession. As long as I have anything in the form of power, it shall not

be lost in my hands, if I have the opportunity of protecting the interests of the profession and at the same time elevating its social position. The facilities now within my reach are very great compared with what they were when I first entered the service. Of late years, you are aware, great improvements have been made in our army establishment, which have enabled me to offer better terms to the candidates, and thus to secure the best materials which our schools produce in the shape of young gentlemen entering the service. I hold this to be an example of what I have always maintained, that if we could only improve the primary education of our candidates, we should hold a high position in society, one which I hope very shortly we shall hold. I do not see why we should not do so. I know men who have had a good education, and been some time in practice, who have been regarded as one of themselves by the gentry and scientific men of this great country. And I do not see why this should not be the case with all; although, perhaps, not quite all, because there are, no doubt, some black sheep in every community. But we have a great work to do, and it is a work which must be aided by every individual member of the corporation. The main thing we have to do is to improve the education of our members, and thus elevate their social position. When we have accomplished that, we shall have no difficulty in getting men as well educated as those who enter the medical profession. I believe that many persons who now enter the medical profession, having a love for horses, would come into ours, only that they do not like the idea of going a step down instead of keeping on a level with that which they have already reached. I thank you sincerely for the compliment you have paid us, and I assure you that no effort shall be wanting on my part to promote those interests which, through the army, affect the general body of our profession. (Cheers.)

Mr. Ernes.— Mr. President and gentlemen, I regret to have to inform you that the toast I have to propose was not placed in my hands originally, and unfortunately the gentleman who would have been able to do justice to it has been obliged to leave the room. I am somewhat of a volunteer, and I hope you will bear with me in the few words I have to say. I might have had a great deal to offer on the subject if I had been better prepared, because I think this is a very important toast. When I tell you that the College of Physicians has existed now nearly 300 years, and when we look back at the progress it has made, I am sure you will rejoice with me in that advance. I sometimes look in at the College

of Physicians, and I have heard some very interestng lectures there. Last year I heard some on the liver, by Dr. Beale, and you know that we have in this country a great deal of what is called fatty degeneration of the liver. Another course of lectures was upon the nerves, delivered by Dr. Radcliffe, and I was very much pleased at the theory the lecturer broached, which certainly had in it the element of novelty. He maintained in his lectures that everything depended on electro-negative or electro-positive action, and that we could thus account for a great many phenomena which we have been unable to solve up to the present time. I hope the time will come when the College of Veterinary Surgeons will have a place where occasionally lectures can be delivered, and that they may also investigate scientific matters connected with their profession, just as the College of Physicians does. I believe the College of Physicians stands second to none. I am acquainted with many Continental institutions, the Ecole de Médecine and others, and I may confidently say that I have never seen anything done there that has exceeded what is done in this country. With regard to the College of Surgeons, I think this is a misnomer. On the Continent surgeons are nothing but surgeons; they simply attend to wounds and broken bones: here surgeons are general practitioners, and there is nothing that escapes them; they have to contend with every disease and every malady, and, as we know, they labour under very great difficulties. We, as veterinary surgeons, have no difficulty in making our *post-mortem* examinations, for we might make them, if we chose, almost every day. Not so with surgeons; they have the greatest difficulty in that respect, and meet with constant opposition. Whenever we have a disease of an interesting nature, we can always investigate its effects, and thus tell whether we are right or wrong in our treatment. I believe surgeons are not quite so ancient as the physicians, but they can trace their origin—I do not like to say to the barber-surgeons—although I am sure they will not be ashamed even of that when they look to the progress they have made since that time. I beg to give you, "The health of the College of Physicians and the College of Surgeons." We are honoured by the presence of some of these gentlemen amongst us to-day, who are eminent in their profession both as teachers and as medical men.

Mr. Quain, in acknowledging the toast said—I am exactly in the same position as the gentleman who has preceded me, for my worthy friend who sat at my right, a distinguished member of the College of Physicians, who was to

have returned thanks for the toast, has been unavoidably obliged to leave the room. Speaking on the spur of the moment, let me say that I do not see why there should not be the greatest possible sympathy between the College of Veterinary Surgeons and the College of Physicians and the Royal College of Surgeons. Their anatomy is very nearly the same, their physiology is quite identical, their pathology also, and the practice of the one harmonises very much with that of the other, so that I do not see why there should not be the greatest sympathy existing between them. Gentlemen, I am more than thankful to you for the honour that you have done these old corporations in drinking this toast.

The President.—The next toast, gentlemen, to which I will call your attention, is one which I am sure you will drink, as we say, in a bumper. It is, "The Court of Examiners." I am certain I need not tell you how much, as a profession, we are indebted to the Court of Examiners for so kindly undertaking the task of testing, in the efficient manner they do, the candidates sent up to them from the different veterinary schools. It has been said that we owe, and I am quite ready to admit it, a considerable debt of gratitude both to the College of Physicians and to the College of Surgeons, for having from the earliest times done all that lay in their power to promote the onward progress of the science to which we are attached. You will see this the more forcibly when I tell you that, until the obtainment of the charter, the examination of our pupils was entirely entrusted to the care of physicians and surgeons. There were some members of our profession at that time who thought that, the College having existed for a considerable number of years, for it was established in 1790, although we were not an incorporated body until 1844, there had arisen amongst ourselves men quite competent to examine the student upon the practical branches of the profession. There were, I say, some members who entertained that idea, and rightly so, but there were others amongst us who thought that we might dispense entirely with what was called the medical section of the board. I am sure, however, that if the strongest advocates for that system were now alive they would see that a considerable advantage has arisen from our being united with physicians and surgeons in the examinations. We can boast, I think, of that which very few professions can, namely, in having associated with us as examiners gentlemen who possess not only an English but a European fame. (Hear, hear.) In looking over the list, which I did only this morning, of those who

have acted as examiners, I found belonging to the College of Physicians the distinguished names of Dr. Fordyce, Dr. Bailey, Dr. Babington, Dr. Babington, jun., Dr. Pearson, Dr. Paris, Dr. Cook, and Dr. Bright; and we can now boast, which we are exceedingly proud of doing, of having upon our Board, Dr. Sharpey. (Cheers.) In the Scotch section we have men no less distinguished for their scientific knowledge as physicians, namely, Dr. Dunsmore, Dr. Begbie, and Dr. Struthers. And if I go from the College of Physicians to the College of Surgeons, I find amongst those who assisted us in the infancy of our profession the names of Cline, Sir Astley Cooper, Wilson, Abernethy, Hume, Travers, Cruikshanks, Liston, Bell, Brodie, Green, Bransby Cooper, and Solly; and last, though not least, I mention our friend, Mr. Quain. (Cheers.) I think I have thus shown you that these professions do take a considerable interest in the one to which we belong. They have shown it from the earliest times to the present moment, and I am sure you will agree with me in thinking that we are under the greatest possible obligation to those distinguished persons who have given up so much of their valuable time to advance our interests. As a teacher, I may be permitted to say, that it matters not how perfect our teaching may be, it can be of little use unless there is likewise a perfect examination. The pupils must be sent to a properly constituted board to be tested; and if they are imperfectly taught, we know the proof of it will be in the rejection of many of them. Not that this would reflect entirely upon the teachers, because we all know there is a diversity of talent amongst us, and that, with the best instruction given, all pupils will not pass the same satisfactory examination. I feel that we are under the greatest possible obligation to these gentlemen for the support they give us, and I trust that we shall continue to be united with them as we now are for many years to come. I ask you to drink "The health of the Court of Examiners." (Cheers.)

Mr. Quain.—I am very sorry again to appear before you in a vicarious position. The chairman of the Court of Examiners (Mr. Brande) is unavoidably absent, or it would have been his duty and pleasure to respond to this toast. I confess that, seeing the way in which you have received this toast, I am surprised at your good nature, and for this reason. Examinations have become so common that it has been proposed by some men, I suppose in jest, to divide men into the examiners and the examined. I suppose, therefore, that many of you have been examined, and certainly you are

very kind towards the examiners. I feel I have a very arduous duty to perform, because I have to return thanks for men who occupy a deservedly prominent position in this country. On my left I see an anatomist and physiologist, who is acknowledged to be second to none in Europe. On my right is a gentleman who is at the head of the public service, and most worthily occupies that office. Then I see two gentlemen, one in practice in London and the other in the country, and they are second to no two men in their profession. It is my arduous duty to return thanks for them; but I look to your good nature to ask you to allow me shortly but sincerely to thank you for each and for all. (Cheers.) But I have now another duty to perform. Our duty as examiners is entirely a secondary one. Unless you had very able teachers at your colleges there would be very little use in your examiners. We can judge of the quality of the teaching in your school by some of the men who come before us; and we can say that in anatomy and physiology they answer us as well as any men who go to the College of Physicians or the College of Surgeons. (Hear, hear.) I have now to propose to you the health of your President. (Cheers.) I cannot, in speaking of him as President, forget that he is one of the distinguished teachers of your school. He is a man, too, who has occupied lately a very prominent position in the public service, and most creditably to himself. But to-day his claim upon us is of a different kind. We certainly owe a great part of the life that has existed amongst us this evening, and the comfort we have enjoyed, to the constant exertions which he has made during the evening. I ask you very cordially to join with me in drinking the health of your President.

The toast having been drunk,

The President said—I can assure you, gentlemen, I feel exceedingly obliged to you for the kind manner in which you have responded to this toast. I do not know that, as President of the College of Veterinary Surgeons, I deserve much at your hands. All I can say is, that during my year of office I have endeavoured to do the best I could to fulfil the duties of the station in which you have done me the honour to place me. If I have failed, it has been rather from want of ability than from want of will to perform the task. I confess I look rather humbly upon my own exertions, and feel that I have not done so much as I ought to have done. Nevertheless, I hope I have been actuated by proper motives. When I went to the College as one of its teachers, I became an instructor in a branch of science which at that time was

hardly recognised; and I hope I may say that that science now stands in a more elevated position than it did at the time of the appointment. But I doubt not that there are many men who could have fulfilled the task as well or better than myself. My labours have, however, not been without some fruit, and I trust that those who may follow me will build upon the foundation that I have attempted to lay, and that the superstructure will prove to be something like an ornament to the profession. (Hear, hear.) I fear I have done but little to interest you in the position in which you have placed me this evening; but you are aware that we have been placed under peculiar difficulties. Here let me say that I wish the members of our profession had assembled in sufficient numbers to fill the large hall of this building instead of dining in a room on the second floor. I have no doubt, if we put our shoulders to the wheel, we may bring about this result on future occasions. It was so during a former presidency, when we were honoured by the presence of the Duke of Cambridge, the Commander in Chief of the army. When the office of president passed from the hands of Mr. Field, it was filled by gentlemen who did not see eye to eye with him as to what ought to be done to place the profession in a prominent position; and hence another good example which he set was not followed, namely, that of calling together the great and noble of the land, on whom we are, as a profession, partly dependent, and likewise men distinguished in science and in art, to those happy meetings at Red Lion Square which assumed the character of *conversaziones*. I certainly deeply regret that meetings such as these were allowed to fall to the ground. I mention this because it may be said that I have had an opportunity during my year of office of doing something in this way. I certainly had it in my heart to do it, and am sorry that circumstances were such as to prevent its being carried out. I found that principals of the College when in office had done nothing of the kind, and also that gentlemen occupying distinguished positions who succeeded our friend, Mr. Field, had likewise done nothing; and I thought it would be hardly right for me, as a mere teacher, to call together men of science and distinction at a *conversazione*, when others had done nothing of the kind. It was partly on this account that I desired that we should dine together in this convivial way, and that these things should be mentioned, so that we might all of us determine to do better for the future, and that it might be seen by the way in which our invitation to the medical section of

our board has been accepted, how ready they were to support us in anything we might attempt. I think we have before us a pretty good assurance that this day we have laid a foundation upon which a superstructure may be raised. I trust that next year the President will be altogether unfettered, and be able to follow the noble example that has been set by our friend, Mr. Field. (Cheers.)

Mr. Wilkinson briefly proposed "The Schools and Teachers," coupling with it the name of Professor Gamgee.

Professor Gamgee said he was but a young veterinary professor, but he hoped long to continue in that position, for he loved the work assigned to him. It was a great gratification to the teacher to see young men rising in intelligence and understanding in the subjects in which they were instructed; and the arduous labours that devolved upon him were very much relieved by the knowledge that they were in every way appreciated. Even in his brief experience he had seen ample evidence of how much could be accomplished by a little work, if carried on with energy and perseverance. He hoped the day was not far distant when the veterinary colleges would have a better opportunity of doing justice to themselves and to the students they educated. The raw material supplied to them was of a good description, but more time was required to prepare it. He hoped that summer sessions would be established, and that the course of instruction would extend over three years instead of two.

Dr. Sharpey.—Mr. President and gentlemen, this evening repeated allusion has been made to the connection of the medical profession with the members of your special profession on the Board of Examiners. But I confess I scarcely expected when I entered this room that it would have fallen to me to bring before you what may be called the toast of the evening. It is a toast which I should feel very great diffidence in proposing, were it not one that speaks for itself. It is often said that "good wine needs no bush;" and I am sure, when I tell you that the toast I have to propose is "The Veterinary Profession," you will at once see that my task may be a very easy one. I think it is a matter of very great congratulation to us that the veterinary profession is now fairly established on a scientific basis; and I cannot but feel that this is in a very great measure owing to the successful labours of the Royal Veterinary College, and, in later years, to the establishment of the College of Veterinary Surgeons. In looking at the paper before me I see there is something like a complaint, and the expression of a feeling of reproach that, of all the persons engaged in the

practice of the veterinary profession, only about a third have received testimonials of fitness from the Royal College of Veterinary Surgeons. Now, I would take leave to observe that all professions have to go through certain stages of progress. The medical profession, or, as I may be allowed to call it, the profession of anthropological medicine, has had to pass through these stages. There was a time when there were no such things as teaching colleges or examining boards—a time, nevertheless, when men of great genius stood out from their fellows, and earned a vast reputation in the world. We may refer, in our own profession, to the time when Hippocrates and Galen flourished; and in later times we may refer to such men as Vesalius and Ambrose Paré. There has been always scope for individual genius to stand forth far beyond the rest, and for men to distinguish themselves and advance the study in which they are engaged. But it is quite true that at that time the vast majority of the medical profession, if I may so call it, were, in surgery, but barbers; in medicine, but herbalists; with a certain smattering of learning, or, rather, a certain pedantic learned jargon which served only to cloak their ignorance. It is only in later times that the members of the medical profession have been able really to claim to belong to a literary and scientific body. This has no doubt greatly been owing to the institution of associations under legislative sanction that have instituted examinations, and have given public attestations of fitness; and the great change that has occurred is not so much in individuals as in the general body of the medical profession. There has been a general advancement—a general tendency towards the acquirement of practical and scientific knowledge in their profession. Now, the veterinary profession has to go through the same process. It has come a little later in the field, and it has for some time been going through this process. In the veterinary profession you have had very distinguised men, long before there were any established bodies under legislative sanction. There have been men of distinction, who would have been ornaments to any profession or science—men like the late Professor Coleman and Bracy Clark, and several others, far better known to you than to me, who have justly earned for themselves great reputation in veterinary science and science generally. But it must be admitted that while, as in the general medical profession, you have had a number of men pursuing the profession of veterinary medicine and veterinary surgery, they have been for the most part very little better than mere handicraftsmen. Such must ever be

the case for a time. This state of things, however, is gradually being changed; and it is matter of congratulation that in the present state of the veterinary profession the great majority of its practitioners are men who have undergone some reasonable education; and in reference to one third, at any rate, of the veterinary body practising in England, that number at least, have become members of the Body Corporate. I suppose it cannot be doubted that a great deal of the improvement that has been made in the veterinary profession is due, in the first instance, to the institution of the Royal Veterinary College. I am informed by my friend on my right, that it has existed since the year 1792; and that they had not only established a regular instruction in veterinary medicine and surgery, but that they had regular examinations, and gave, without legislative sanction, attestations of fitness. No doubt this voluntary institution, as it might be called, has had a most beneficial effect in advancing the profession; but within the last twenty years, the Royal College of Veterinary Surgeons, incorporated by Royal Charter, has had legislative sanction for giving attestations of fitness, by which the regularly educated veterinary surgeon may be distinguished by the world from the irregular practitioner. I think this is a matter of very great congratulation indeed, and that a new era has been opened for the profession, by the institution and by the labours of the Royal College of Veterinary Surgeons. As a member of the examining body, I feel that it is a pleasure to be associated in the task of elevating the veterinary profession with gentlemen of great eminence in the profession; and I think it is the duty of the practitioners of anthropological medicine to lend their best aid to the accomplishment of that great end. Let me observe, before I sit down, that there are many points of correspondence between the two professions, as has been alluded to by Mr. Quain; and I feel, particularly, in my own person, that I form a sort of uniting medium between the two. The physiology is the same in both cases, and let me also observe that we are largely indebted for the progress of physiology as a general science, having no more special reference to man than to the domestic animals, on which we so much depend, to the members of the veterinary profession. It is not for me to go into detail and to specify all the instances of this kind; but there are two that occur to me, particularly, at this moment. First, I would refer to those remarkable experiments which were made by one of your body, Professor Hering, of Stuttgart, upon the velocity of the circulating

fluid. He has furnished us with the only exact data we possess as to the velocity of the current of blood. Those were most valuable experiments that he performed some thirty or forty years ago, and I am glad to say that he is still alive and able to repeat and confirm them. Another subject, which is of very great interest to both professions, is one which has only been of late years in any way cleared up,—I mean the economy of the entozoon, and I must say that we are largely indebted to such men as Professor Röll, of Vienna, and Professor Heubner, of Dresden, for the light they have thrown upon that wonderful subject. I think it is our duty henceforward to endeavour to work together, as far as possible, in the promotion of that great common science on which the two practical professions are founded. The same laws prevail in the economy of animals as prevail in the economy of man, and it is our duty to co-operate as largely as we can in promoting the investigation of those laws. It is not for me to say more on the present occasion in reference to the veterinary profession, except to remark that it is a subject of very great congratulation that it is now fairly launched in a progress and in a line of advancement which cannot fail to place it high in the public estimation. I beg leave to propose "Prosperity to the Veterinary Profession." (Cheers.)

Mr. Robinson proposed "the Royal Agricultural Society." That Society, he said, was highly esteemed in the country, and had been the means of effecting great improvements in the cultivation of the soil and the breed of cattle. He well remembered its first meeting at Oxford, where, amongst the animals exhibited, there was but a single sire, and the implements comprised two or three carts and waggons, and a few machines employed in agriculture. Contrasting that meeting with the one held last year at Battersea, the progess of the Society would be seen to have been most remarkable.

Mr. W. Field, jun., proposed the health of the Council of the College.

Mr. Field, in responding, said that the Council had endeavoured to fulfil the duties of their office, and he hoped they had done so to the satisfaction of the members of the profession. He trusted that the rising generation would bestir themselves in promoting the advancement of veterinary science, and thus succeed in obtaining a position for the profession, which it had not yet reached.

Mr. Goodwin proposed the health of Mr. Braby, and dwelt on the services rendered to the College by that gentleman in various capacities.

Mr. Braby, in acknowledging the compliment, said he was happy, as Treasurer, to inform them that the finances of the College were in a more promising state than they had been in for some years. The duties of his office, he said, were very light; and he was only too happy if he was able to discharge them to the satisfaction of the members.

The President proposed the health of the Country Practitioners, to whom, he said, they were all indebted for the manner in which they upheld the dignity of the profession. The toast was coupled with the name of Mr. Burley.

Mr. Burley, in acknowledging the toast, said that there was no class of men more anxious or more zealous for the honour of the profession than the veterinary surgeons of the country. He contrasted the difficulty of obtaining veterinary instruction in his youthful days with the facilities at present afforded by the veterinary schools, and he expressed the gratitude he felt towards the medical profession for the assistance rendered by its members. He said there was no greater gratification experienced by the country practitioners than in coming to London once a year to do honour to their instructors, to whom they were so deeply indebted.

Mr. Broad proposed the health of the Vice Presidents and Stewards.

Professor Brown acknowledged the toast. While thanking Dr. Sharpey for the manner in which he had associated the two professions, he thought there was a great deal yet to be done before the members of the veterinary profession could claim a right to the position they really ought to occupy. He was sorry to say, but it was forced upon him by thirteen years' experience as a teacher, that there was a lamentable want of preliminary education in the students who presented themselves at the schools. He perfectly concurred in a statement he had heard made by a distinguised member of the profession, that there ought to be a preliminary examination; that it ought to be understood that a certain amount of general education was indispensable for every veterinary student. When that was the case there would be a great improvement in the body of veterinary surgeons. He urged the necessity of mutual forbearance on the part of the members of the two professions, and referred to an instance in which a surgeon had expressed to him his conviction that the navicular bone of a horse could be extirpated, grounded upon the circumstance that the astragalus had been successfully removed from the human subject. He advocated a reciprocity of modesty, and an abstinence from dogmatizing

in reference to general principles of treatment, which, however identical, were often perfectly irreconcilable.

Mr. Ernes proposed the health of the Secretary, Mr. Coates, and alluded to the arduous labours performed by that gentleman in obtainining the statistical information embodied in the Annual Report, in preparing an improved Register, the County and Military List, and in the other duties of his official position.

Mr. Coates, in responding to the toast, said he had always felt a warm interest in the veterinary profession. He had done his best to fulfil the duties of his office, all of which were new to him; and he was deeply indebted to the President and other members of the Council for the kindness he had received at their hands.

Mr. Field proposed the health of the visitors, coupled with the name of Mr. Burley, jun.

Mr. Burley, jun., briefly acknowledged the toast.

The toast of the ladies having, at the instance of Mr. C. Dickens, been duly honoured, the company separated about 11 o'clock.

ROYAL COLLEGE OF VETERINARY SURGEONS.

MEETING OF COUNCIL, HELD APRIL 22, 1863.

PRESENT:—The President, Messrs. Braby, Ernes, Field, Goodwin, Harpley, Jex, Moon, Wilkinson, and the Secretary.

The PRESIDENT in the Chair.

The minutes of the preceding meeting were read and confirmed.

The Balance Sheet of the receipts and expenditure as audited, was laid on the table.

The Annual Report of the Council, as prepared by the Report Committee, was read and adopted.

The adoption of the Report was moved by *Mr. Field,* seconded by *Mr. Goodwin,* and carried.

The thanks of the Council were awarded to the Committee.

A new book was ordered for the entry of the Rules, Orders, and Bye-laws of the College.

The Council gave instructions for Bye-law No. 27 to be duly signed and sealed in accordance with the provisions of the Charter.

By order of the Council,

W. H. COATES,

Secretary.

SPECIAL MEETING OF COUNCIL, HELD MAY 19, 1863.

PRESENT:—Professors Simonds, Varnell, and Gamgee, Messrs. Braby, Burley, Ernes, Field, Hunt, Jex, Lawson, Moon, Robinson, Silvester, Wilkinson, Withers, and the Secretary.

It was moved by *Mr. Ernes*, and seconded by *Mr. Robinson*—

"That Professor Simonds take the chair."—Carried.

The minutes of the preceding meeting were read and confirmed.

The election of a President for the ensuing year was then proceeded with.

It was moved by *Mr. Wilkinson*, and seconded by *Mr. Lawson*—

"That Professor Dick be elected President for the ensuing year."

After a long discussion, in which a doubt was expressed as to whether Professor Dick, even if willing to accept the appointment, would be able to give the necessary attendance in order to fulfil the important duties of the Presidency:

It was then moved by *Professor Gamgee*, and seconded by *Mr. Braby*—

"That Mr. Ernes be elected President."

The ballot was then proceeded with—the result was, for Mr. Ernes, nine; Prosessor Dick, five.

Mr. Ernes having taken the chair, returned thanks for the honour of his election.

It was moved by *Mr. Silvester*, and seconded by *Mr. Field*—

"That a vote of thanks be given to the late President for his urbanity and impartial conduct in the chair during the past year."—Carried by acclamation.

Professor Simonds returned thanks; and at the same time handed over to the President the official Key of the Royal Charter and Seal.

The election of six Vice-Presidents was then proceeded with.

The following gentlemen were proposed:

Mr. Goodwin, by Mr. Robinson.
" Harpley, by Mr. Burley.
" Dickens, by Mr. Hunt.
" Aitken, by Mr. Silvester.
" Gardiner, Mr. Harrison, and
" Partridge, by Mr. Wilkinson.
" J. C. Broad, by Professor Varnell.

Mr. Joseph Gamgee, by Professor Gamgee.
,, Wadlow, by Mr. Jex.

The result of the ballot was for—

Mr. Harpley, 16; Mr. Dickens, 13; Mr. Goodwin, 12; Mr. Aitken, 12; Mr. Harrison, 10; Mr. Gardiner, 9; Mr. Partridge, 7; Mr. Broad, 5; and Mr. Wadlow, 2. Whereupon Messrs. Harpley, Dickens, Goodwin, Aitken, Harrison, and Gardiner were declared duly elected.

It was moved by *Mr. Jex*, and seconded by *Professor Gamgee*—

"That Mr. Coates be elected Secretary and Registrar for the ensuing year."

On the ballot being taken, Mr. Coates was declared unanimously elected.

By order of the Council,
W. H. Coates, *Secretary*.

NEW MEMBERS OF THE PROFESSION.

At the several meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, the following gentlemen passed their examinations, and were admitted members of the body corporate.

STUDENTS OF THE ROYAL VETERINARY COLLEGE, LONDON.

April 27th.

Mr.	John McCutchan . .	Dulwich, Surrey.
—	John Alex. McKenna .	Belfast.
—	Thomas H. Ford . .	Biggleswade, Beds.
—	Henry Lawrence, jun. .	Stewards Romford, Essex.
—	John Freeman . . .	Hull.
—	George J. Emerton .	Great Horwood, Bucks.
—	Henry Peele	Durham.
—	Louis V. Plagemann .	St. Kitt's, West Indies.
—	Owen Thomas . . .	Llandilo, Carmarthen.

April 28th.

—	George T. Cross. . .	King's Lynn, Norfolk.
—	James Buckeridge . .	Hungerford, Berks.
—	George Fordham . .	East Peckham, Kent.
—	Samuel James Rayment	London.
—	Thomas D. Hulme . .	Congleton, Cheshire.
—	William Rhys Watkins	Brecon, South Wales.
—	William Jennings . .	Fritwell, near Bicester, Oxon.
—	William S. Moore . .	Gateshead, Durham.
—	George H. Plumbly .	Southrepps, Norfolk.
—	Harry D. Pritchard .	Wolverhampton.
—	John W. Hedley . .	Richmond, Yorkshire.
—	John Dobson . . .	Holbeach.

April 29th.

Mr. Alfred W. K. Fordham — Royston, Herts.
— Joseph N. Allison . . — Bedlington, Northumberland.
— Edward Hire . . . . — Scilly Isles, Cornwall.
— George S. Whitemore . — Langport, Somerset.
— Eusebius G. Crowhurst — Warbleton, HurstGreen, Sussex
— Albert E. Banister . . — Peasmarsh, Sussex.
— Frederick W. Barling . — Newnham, Gloucester.
— Samuel L. Buckley . — Oldham, Lancashire.
— Thomas H. Ward . . — Thaxted, Essex.
— Charles W. Elam . . — Huddersfield.
— Thomas Walley . . . — Market Drayton, Shropshire.

April 30th.

— Thomas W. Butler . . — Newbury, Berks.
— Walter P. Fooks . . — Dartford, Kent.
— Joseph Attwood . . . — Willenhall, Staffordshire.
— John D. Overed . . . — Blofield, Norfolk.
— Alfred Bland. . . . — Boston, Lincolnshire.
— John G. Furnivall . . — Bayswater, London.
— William J. Bickford . — Kingsbridge, Devon.
— Charles J. Pyatt . . — Nottingham.
— William J. Easton . . — Woodford, Essex.

May 1st.

— William J. Anderton . — Shipton-in-Craven, Yorkshire.
— Herbert Springett . . — London.
— Thomas A. Byron . . — Bradford, Yorkshire.
— Robert T. Hardy . . — Grantham, Lincolnshire.
— Samuel W. Vines . . — London.
— Henry Edwards . . . — St. Alban's, Herts.
— Jacob Howe . . . . — Keswick, Cumberland.
— Harry East . . . . — London.
— Henry Ching . . . — Clapham, Surrey.
— Edward Ewing . . . — Clapham Park, Surrey.
— James Moore, jun. . . — London.
— Job Wheeler . . . . — Thurrock, Grays, Essex.
— Jacob Dawson . . . — Kettering, Northamptonshire.
— Augustus M. Loades . — Gateshead, Durham.

STUDENTS OF THE EDINBURGH VETERINARY COLLEGE.

Mr. Hugh Anderson . . . — Newtonards, County Down.
— Edward Coleman . . — Sutton, Surrey.
— William Coupland . . — Little Sutton, Chester.
— William Eastcott . . — Broadwood, Devonshire.
— William Evans . . . — Mitchelston, County Cork.
— Nicholas Harrison . . — Kirkby-Lonsdale, Westmoreland.

Mr. Benjamin R. Kirk . .	Snaith, Yorkshire.
— John McLaren . . .	Newport, Yorkshire.
— John Malcolm . . .	Longsight, Manchester.
— Edmund Nuttall . .	Bury, Lancashire.
— William Pallin . . .	Dublin.
— Benjamin Smith . .	Barnsley, Yorkshire.
— William Worthington .	Wrightington, Lancashire.

STUDENTS OF THE NEW EDINBURGH VETERINARY COLLEGE.

Mr. William Anderson . .	Borthwick Brae, Hawick.
— James Baillie . . .	Edgehead, Dalkeith.
— Hugh M. Baker . .	Langlee, Jedburgh.
— James Boyd	Silvermoor, Lanark.
— Thomas Browne . .	Wing, Buckinghamshire.
— Nicholas Carney . .	Ardwick, Manchester.
— William Cumming . .	Edinburgh.
— William Duguid . .	New Veterinary College, Edinburgh.
— Thomas Harwood . .	Liverpool.
— William Irvine . . .	Girvan, Ayrshire.
— Daniel McGregor . .	Seaton-Delaval, Northumberland.
— John A. McBride . .	Glasgow.
— Patrick McKenzie . .	Cargill, Perthshire.
— David Menzies . . .	Bellfield, Lanarkshire.
— Robert Morris . . .	Wick, Caithness.
— Robert Morton . . .	Mains of Stobhall, Perthshire.
— John Panton	Blair-Athole, Perthshire.
— James H. Reynolds .	Newark, Notts.
— Alfred E. G. Robinson	Bolton-le-Moors, Lancashire.
— John N. Taylor . . .	Yorkshire.
— James Thomson . . .	Tarland, Aberdeenshire.
— Robert Watson . . .	Kelso, Roxburghshire.

ARMY APPOINTMENT.

Thomas James Richardson, gent., to be Acting Veterinary Surgeon, *vice* Wm. Hall, promoted, in the 6th Dragoon Guards.

ERRATA IN NO. 425.

At p. 265, line 4, *for* "and," *read* "but;" and at line 6, *for* "similar to the one reported by Mr. Billington, but his is," &c., *read* "similar—the case reported by Mr. Billington is," &c.

By an inadvertency in our last number, Mr. Owles, V.S., and Mr. Littler, are stated to be members of the Royal College of Veterinary Surgeons.

THE

VETERINARIAN.

VOL. XXXVI. No. 427. JULY, 1863. Fourth Series. No. 103.

Communications and Cases.

DISEASED MEAT.

A Letter from JOHN RENTON, M.D., L.R.C.S.E., &c., Edinburgh.

GENTLEMEN,—At page 314 of your number for May last there is a report of a case, headed, "Unwholesome Meat—Rot in Sheep," tried at Plymouth Guildhall, on a complaint at the instance of the inspector of nuisances against a butcher "for exposing for sale six sheep unfit for human food." The Board of Health had given the necessary instructions for prosecution for the good of the public; and it is stated that, although the law was very severe against the offence of exposing for sale the carcasses of sheep, which "were totally unfit for any human being to eat," as these were represented to be, yet the board very unaccountably expressed a wish not to press the case against the defendant, although he "well deserved the severest penalty the law could inflict," and would be content, if the magistrates issued an order "for the carcasses of the sheep to be destroyed." The evidence in support of the charge was supplied by the inspector, who "observed in defendant's shop six sheep that had just been brought in, and he thought they looked very diseased." He called in a veterinary surgeon, who deposed that the sheep "were quite unfit for the consumption of human beings, and had suffered from a disease called "*coade*" or rot, which had its seat in the liver, and which was very prevalent among sheep this season. A butcher of thirty years' experience gave similar evidence. The Bench ordered the carcasses to be immediately destroyed.

Not impugning in the slightest degree the judgment of the court, it would be wrong to allow such a case to pass unnoticed without reflecting on its exceedingly imperfect details, and the very unsatisfactory manner in which the bearings of so important a case, in a professional point of view, were elicited. All the information given by the veterinary surgeon was to the effect that the sheep "had suffered from a disease called *coade* or rot, that had its seat in the liver." Did he see and examine the liver? If he did, why did he not describe the morbid state of that organ?—or was it a mere *speculative opinion* of his own, that the animals had laboured under the disease he referred to? Why should the public be left in the dark, or have to conjecture whether the sheep had actually died from the effects of the diseased hepatic functions, or been slaughtered before death? There is a vast and well-marked distinction between the appearance of the flesh of animals in these two opposite states. The veterinary surgeon merely says that the sheep were *quite unfit* for consumption, but he is wholly silent as to whether this unfitness was caused by natural decomposition or diseased action of a vital organ. In short, the profession is altogether uninformed as to the precise and particular conditions of the carcasses of the sheep—essential points which admit of no excuse for the want of pathological and normal description—on which so summary a veterinary condemnation was founded. The value of a professional opinion depends entirely on the valid and rational grounds adduced in its support, and not on bare assertion.

My attention has been drawn to this case, as during my practice in the medical profession in the county, many years ago, the diseased state of the liver of sheep was prominently brought under my notice. In the flocks of sheep reared by three extensive landed proprietors in the same county for home use—who killed their own mutton, and boasted of the superior quality of their five-year-old—after a wet season the farm servants who slaughtered the animals, and had been in the practice of sending the livers to the kennels, found they had become so rotten and diseased and so full of living creatures (flukes), that the keepers refused to take them, and actually buried them, as being altogether unfit for dog's meat. I happened accidentally to mention the circumstance to one of the proprietors at whose table I was in the habit of dining frequently, who made a rigid inquiry, and found the account I had given to be as I had stated. He learned that the diseased liver had become gradually worse and worse, until it presented a frightful mass of corruption. He took offence on his

not having been informed of this, but the servant excused himself, that he never thought of alarming him so long as the flesh of the sheep was sound and healthy. The two other proprietors found on examination that the livers of their five-year-old mutton were in the same state, and they all expressed their surprise how the animals could continue so healthy, and their flesh so good and untainted, with such a mass of corruption within them. I explained that *the whole liver was not diseased,* although it might probably ultimately become so, and that in the latter stages of the disease the process of morbid action would rapidly progress, and the sheep would suddenly drop down and die, according to the extent and intensity of the affection, when the flesh would become tainted, and when they died would rapidly undergo decomposition, rendering it unfit for use.

I understand that sheep removed from high localities—reared on poor herbage—to be fattened off a low, rich pasturage, are liable to similar hepatic disorganization, and that dealers sustain fearful risks and losses in purchases under such circumstances. The fact is not so well known as it ought to be, that sheep will preserve their flesh while their livers are more than three fourths diseased, and that the disease is found to prevail in damp, low pastures, and wet seasons. The fluke (the *Distoma hepaticum*) seems to originate from these two causes, and inquirers into the causes, seat, and progress of the disorders among the lower animals cannot have their attention too carefully and constantly directed to such modifying influences on their healthy functions. I mentioned this circumstance to one of the most respectable butchers in an extensive business in this city about eight days ago, and he confirmed my statement by informing me that, a few years ago, one in his own trade had purchased from a laird in the west of Scotland ten or twelve scores of sheep, which were taken to the rich green fields of East Lothian, to be put into condition for slaughtering as he required them. The ground was damp and the season wet, and the sheep did not thrive according to expectation. A few only of them were killed, and in their livers flukes were found. In the course of two to three months, he wrote to the gentleman from whom he purchased the sheep, that they had turned out very badly, and would prove a very losing bargain; when he conditionally offered to take them back being thoroughly satisfied as to the soundness and healthiness of his stock. They were accordingly returned, and on their way to the railroad station, a distance of only a few miles, not fewer than thirteen of them dropped down and died; so

rapidly had the disease progressed in some of them, that death supervened on their being subjected to a little extra fatigue. These animals died from causes on which no rational difference of opinion can exist, but in the teeming brain of the contagious alarmist, might it not be cited as an example, to show how a flock of sheep will suffer from an infected district, and how they ought all to have been destroyed, to prevent the spread of the disease by contaminating the trucks? The same butcher showed me in his shop the carcasses of four oxen slaughtered that morning out of eight he lately purchased, and for which he paid £172 sterling. I never saw richer or healthier beef in any market; the flesh being of a bright-carmine colour, and intermixed with layers and deposit throughout of white fat, juicy and plump. He then ordered his foreman to bring the livers taken from two of these animals, the other two having been removed, for my inspection. He put it to me to say whether I had ever seen better meat or in higher condition than he showed me, or could believe it to be the flesh of oxen slaughtered with such enlarged and diseased livers? I confessed my surprise. I carefully examined the livers. They were abnormally enlarged, with the exception of a small portion of one of the lobes; the substance of the whole viscus was disorganized. A great portion was in a semi-cartilaginous state, and the edge of the knife used in cutting into it excited the sensation as if grating on sand-paper. There were numerous abscesses filled with matter, some very large, having indurated sacs. Before long the animals must have certainly succumbed under the disease, but the fact is not less instructive, how long the healthiness of the flesh is preserved in such an extensive state of morbid action in the liver. The public has been widely and fearfully alarmed at the reports of human life and health suffering from the consumption of the flesh of diseased animals. The instances I have cited are calculated, in my opinion, to allay such injurious apprehensions, so far, at least, as the flesh of sheep and oxen is concerned, labouring under flukes in the liver, and those other fearful morbid ravages in that organ which I have described.

In a report lately published by the Swiss Veterinary Association, an enlightened society, composed of the most eminent members of the medical and veterinary profession in that country, I find among the many very important questions submitted to their investigation and decision one, viz., whether the flesh of animals slaughtered with lung disease is injurious as an article of human food. After long and care-

ful consideration, the society came to the conclusion that no dangerous consequences were proved by experience to have resulted from the use of such food.

In the face of such facts and statements, the highly important questions, so lately and loudly agitated, relative to the spread of disease by contagion and infection, and to the poisonous effects of diseased meat on the public health, cannot be too deliberately considered; and Parliament assuredly would best consult its own wisdom and the happiness and welfare of the public, before committing itself to hurried legislation, to consult those best competent, from pathological knowledge as well as personal observation and experience, to pronounce authoritative opinions, than listening to the interested representations of parties seeking to create new and lucrative offices, which would only have the effect of making them real public nuisances, in place of the imaginary ones they complain of. I say the Government should pause and ponder, considering how deeply the vital interests of agriculture, and the immense capital invested in it by dealers in stock and butchers, would be injured by hasty and ill-considered legislature enactments.

I am, gentlemen.

To the Editors of the 'Veterinarian.'

TUMOUR WITHIN THE WINDPIPE OF A HORSE.

By Walter Watson, M.R.C.V.S., Rugby.

The following is a brief history of the patient whose trachea I forwarded to you a short time ago. The animal in question was a chestnut horse, seven years old, which had been regularly hunted, and appeared in perfect health, but as the hunting season was drawing to a close, the owner wished to dispose of him, and the Rev. T. W. Jex Blake, of this town, became a purchaser on the 11th of March. In a few days after, upon riding him fast up hill, Mr. Blake fancied the animal made a slight noise during respiration: this was also noticed by a friend who rode him a short time after. On March 31st my partner, Mr. Walker, was called upon to examine him with especial reference to his wind, and pronounced him to be a roarer, the animal at this time making considerable "noise." As nothing was to be seen at this time to account for the roaring, it was attributed

to the ordinary cause, viz., some obstruction to the natural respiratory functions situated in the larynx. In a day or two after he was sent away to be broken to harness, but in a few days the "breaker" noticed an enlargement in the neck and a difficulty of breathing when the animal was made to undergo exertion; he therefore sent him home again, and on Monday, April 13th, we were sent for to see him. We found that the animal, when walked out, made a peculiar roaring noise during respiration, which there was now no difficulty in perceiving was caused by an enlargement existing half way down the neck, and obstructing the natural respiration. The case being an unusual one, and not being very certain as to the real nature of the disease we had to contend with, I suggested taking the animal to the Veterinary College for your opinion. To this the owner consented, and on the following day I proceeded with the animal to the College. The enlargement and difficulty of breathing had increased during the night, and on the way from Euston Station to the College the horse had several severe fits of coughing. Your examination of him, you will remember, resulted in your giving an opinion that the obstruction, whatever it was, existed within the trachea, being in all probability situated between the tracheal muscle and the superior and posterior part of the trachea, and that the ultimate recovery of the animal was very doubtful. He was brought back to our stables the same night, and the treatment (viz., warm fomentations with alterative medicines) carried out for about a week. The animal continuing in much the same state, excepting that the enlargement slightly increased, more particularly on the left side, a blister was applied, and after remaining for another week with little alteration, we thought he might be removed to the owner's stable, being situated but a short distance. On April 27th the groom proceeded to remove him, and during the journey he kicked and played about, showing how little effect the disease had upon his general health. This, however, brought on violent coughing, and rendered the respiration so difficult as to quite alarm the groom. However, after being in the stable a short time, he quieted down, ate a mash, and appeared about the same as on several days previous. On the following morning, about nine o'clock, the groom came in haste to say that the horse was worse, and that unless something was done he would soon be dead. Mr. Walker and I went immediately, and found the animal reeling and staggering about the box, with open mouth and distended nostrils, breathing with great difficulty (the inspiration being long and the expiration very short), evidently suffering from impending suffocation. The only means of pro-

longing life that remained to be done was to perform the operation of tracheotomy; but as the ultimate recovery and value of the animal, even when this operation had been performed, was very doubtful, we recommended the owner to have him destroyed. He was soon after shot, and the same day I removed the trachea, which I forwarded for your inspection. The case, I think you will agree with me, presents some features of interest, not the least being the somewhat rare occurrence of obstructions existing midway in the tracheal tube, sufficient to cause death. It also shows the importance of carefully examining the course of the trachea in cases of roaring, as it clearly shows that this affection does not always proceed from obstruction to the natural function of respiration in the larynx. The nature of the obstruction and its probable cause I must leave for you to explain.

Believe me, &c.

To Professor VARNELL.

REMARKS BY PROFESSOR VARNELL.

Defective breathing in the horse, accompanied with unnatural respiratory sounds, being so very common, and the special causes which produce it being so various, as well as the length of time which in many instances it may have existed, beside the uncertainty whether a cure can be effected or not, make it important that the pathology of the affection should be, as far as possible, well understood. It is on this account that we have to thank Mr. Watson for a very interesting, as well as unusual specimen of disease of the trachea, which evidently had been the cause, in the case in question, of the defect termed roaring. In this instance the abnormal sound was for a time supposed to depend upon disease of the larynx, the most common seat of roaring; and it was not until the 13th of April, thirty-three days after the horse was purchased, that the locality in which the impediment existed was discovered. In a pathological point of view, it is very important that the true history of such cases should be known, for this information, especially when conjoined with a careful examination of the morbid parts, cannot fail to materially assist us in arriving at definite conclusions as to the cause which primarily produced the impediment to respiration. Before giving an opinion as to the cause and duration of the disease, I will briefly describe the physical appearance of the tumour, and also as much as I was enabled to make out of its structure. About twelve inches below the cricoid cartilage

of the larynx an enlargement existed in connection with the trachea, which, upon further examination, was found to be partly on the outside of the tube and partly within it. The portion which was external was situated at the supero-posterior part of the organ, whilst the other was within it, or rather between the cartilaginous rings and the transverse tracheal muscle. The first-named portion extended about six or seven inches along the back part of the trachea in a longitudinal direction. At its thickest part it was about one and a half inch in substance, its interior being of a dull-red colour, apparently produced by effused blood. Its structure, as far as I could discover by the aid of the microscope, consisted simply of condensed areolar tissue.

The part of the enlargement which was within the trachea extended over a greater surface, and was much more bulky, and when cut through had an appearance, and density also, unlike those of the other portion. It cut with a hard, jerking sensation, and was of a light bluish-gray colour. Examined with the microscope, I detected the following elements in its composition, viz., simple fibrous tissue, fibro-plastic tissue, elongated cells, and large nucleated cells—cancer-cells, I suppose. I venture to designate this portion of the deposit as *semi-malignant* in its character. During the last two or three weeks of the animal's life it, no doubt, had increased rapidly. The muscle alluded to, within the trachea, was paler than natural, and much attenuated; but the mucous membrane which covered the deposit was in no way, as far as I could detect, involved.

The question I shall briefly consider is, upon what did the disease primarily depend? The redness at the back part and centre of the tumour would suggest the idea that it was caused by external violence, and such, I think, was the case. There were, however, no marks on the skin of the horse's neck to indicate such injury; nevertheless I can conceive that, by his coming in contact with some hard substance, the mischief could have been produced without leaving any mark on the skin.

The non-malignant part of the enlargement, viz., the portion outside the trachea, can easily be supposed to have been produced in this way; but why the morbid growth within should have been of a different character I am unable to state. I believe, however, that it is not uncommon, when a part has been injured by a blow, after some time has elapsed, for malignant growths to originate. The development of such products for a time will appear to be slow, but

all at once they are found to increase fast, and especially so if the part should receive any fresh injury. The disease between the rings of the trachea and the transverse tracheal muscle might be considered as idiopathic. This is possible, but I certainly incline to the former idea.

SIMPLE RULES ON SHOEING.

By W. Ernes, M.R.C.V.S., London.

1st. After having taken off the old shoe, shorten the toe, and remove all the dead and loose parts of the hoof. Do not cut the sole or pare the frog, except when the foot has received an injury from a nail or otherwise, when it must be well cut out.

2nd. Let the shoe be of equal thickness, or rather thinner at the heel. The ground and foot surface should be perfectly level. The shoe should lay light on the heels. Too many nails are objectionable, and these should be kept as far as possible from the heels.

3rd. For the hind feet there is no objection to calkins, though they are of doubtful benefit. Horses travel better without them. The hind shoes are made thicker at the toes than at the quarters; the nails also can be put closer to the heels without causing inconvenience.

4th. Side clips should be avoided; they destroy the hoof. The same is the case when the nails are too close together. The feet should never be rasped, as it destroys the enamel of the hoofs, renders them brittle, and causes sandcracks, and consequently lameness.

5th. Expansion is a fatal error, which has led to many abuses in shoeing, such as paring of the sole and frog, rasping of the hoof, &c. The elasticity of the foot, which is, however, very limited, exists only on the upper part of the hoof, principally round the coronet. On the lower part, and the toe it is *nil*.

CASES OF PURPURA HÆMORRHAGICA.

By J. R. Dobson, M.R.C.V.S., Ashby-de-la-Zouch.

Case 1.—On the 5th of June, 1862, I was requested by a farmer residing at Ticknall, a village about three miles from this place, to attend a well-bred, aged, chestnut mare. She was unfit for the road from chronic foot lameness, and was therefore used solely upon the land and for breeding purposes. At the time she had a fine colt foal at her foot. She had been an unusually healthy animal, for during the three years she had been in her present owner's possession she has not manifested the slightest symptom of any disease.

Upon the day preceding my attendance her hind legs were observed to be slightly swollen, but this being attributed to want of exercise, no notice was taken of it. The day following, however, such alarming symptoms presented themselves that my attendance was immediately requested. Upon examination I found all the four legs enormously enlarged, from the fetlocks to their junction with the trunk, where the swelling abruptly terminated as though a cord was tightly tied around the limbs. They were excessively tender to the touch, and discharged in places a thin, serous fluid. The animal's appetite remained unaffected, and there was but slight constitutional disturbance present, excepting an accelerated pulse. One or two bright-scarlet spots existed also on the mucous membrane of both nostrils. The dung was pultaceous, the animal being fed on cut grass; but the urine was scanty in quantity, and of the colour and consistence of linseed oil.

Treatment.—The following draught was ordered to be given in a sufficient quantity of strong ale:

℞ Ol. Terebinth., ℥ij;
Sp. Æth. Nitr., ℥ij.

This was repeated in the evening.

On the following day, the 6th, the swelling had almost entirely left the hind legs, but the chest and lower part of the neck were now involved, and there was a slight enlargement about the lower lip, which made me apprehensive that the swelling might attack the head. The appetite is still good, but there is some disturbance of the breathing, and the pulse is weaker.

Give the draught three times a day, and admit the foal to her now and then, so as to keep the mammæ empty.

On my next visit (the 7th) I found the mare much better. The swellings were lessened, and the respiration and pulse more natural. The urine had acquired its natural appearance, and the quantity was increased; but there was a good deal of irritation existing about the bladder, so much so as to make me resolve to discontinue the draught, and to substitute for it the iodide of iron in combination with a milder diuretic.

On visiting my patient again on the evening of the next day (8th), a sad change for the worse was observed; the swelling had increased in the fore limbs and chest, and the head was now involved, so much so as to interfere considerably with the breathing; the mucous membrane, as much of it as could be seen, was covered with scarlet spots, some of which were in a sloughing condition, and a nasty unhealthy discharge came from the nostril. The mare now can scarcely move, and the respiration is performed with difficulty. The urine has again become scanty, and has resumed its discoloured appearance.

The owner attributed her relapse to a discontinuance of the draughts, stating that, in a few hours after the last was given, the swelling of the head and chest began, and continued to increase up to the time I saw her. Repeat the turpentine draught, giving it three times in the day.

The day following she was much the same, or if anything a little better.

On the 10th there was a still further improvement perceptible; the swelling had now left the limbs, and located itself principally in the breast and abdomen. The mare can walk comfortably, and the enlargement has so far left the head as to enable her to breathe with comparative ease. The urine has also again become plentiful, but she makes constant efforts to urinate, and her mouth is so much excoriated by the turpentine, that I am again tempted to lessen the draughts to one a day, and substitute the balls containing the iodide of iron.

11th.—The mare is again worse, and the most unfavorable symptoms are evidently returning, so that we were compelled to return to the draughts again, which seem to have an immediate good effect.

From this time the animal rapidly recovered, the disease leaving no ill effects except a little sloughing of the skin of the heels of the hind legs.

Case 2.—On the 15th of April, 1863, I was requested to see a two-year-old mare, the property of an innkeeper in this town.

Upon inquiry, I ascertained that she had recently had an

attack of strangles, but of a very mild character; the submaxillary abscess forming and breaking in the ordinary way. To-day, finding her lame and stiff in her hind legs, the owner sought my opinion. The symptoms that presented themselves, and the subsequent progress of the case, were so similar to those described by me in the former case, that a recapitulation is altogether needless. The only difference in the two cases was that, in the animal now under treatment, the disease assumed a far more virulent form from the first; the swelling, both in the hind and fore limbs, was enormous, and the head, which was subsequently attacked, was enlarged from the root of the ears to the lips, so much so at last as to make me hesitate whether or not to perform tracheotomy. We had also here to contend against loss of appetite from the commencement.

The treatment was likewise precisely similar to that in the former case, uniting, however, with the medicines given, port wine and brandy, as typhoid symptoms began to show themselves in a very early stage.

On the eighth day after the attack the violence of the disease seemed to give way, and the swellings to gradually subside. Extensive sloughing of the skin, both of the lips, the hind legs, and the heels, began now to take place, leaving large ulcers of an unhealthy character, and emitting a most offensive odour. These were treated with the diluted sol. of zinci chlorid. The mare was sufficiently recovered to be turned out about the twenty-first day, requiring, however, careful attention as to diet and management for a much longer period.

RUPTURED COLON OF A HORSE.

By J. Barnett, Student of Veterinary Medicine, Market Drayton.

Seeing a discussion in your columns respecting the time an animal might live after a rupture of the intestines had taken place, I am induced to send you an account of the following case. On April 9th I was requested to attend a bay cart-horse, four years old. I found him suffering from abdominal pain, which passed off after the administration of a draught consisting of—

Ol. Tereb.,
Tinct. Opii, et
Spt. Eth. Nit., āā ℥ij.

He was also clystered, and had stimulants applied to the abdomen. On the next day he appeared perfectly recovered, and went to work as usual. I heard no more of him until May 5th, at 11 p.m. He had been working in a light cart some distance during the day, but at a slow pace; he had refused his food for the last eight or nine hours, but showed no uneasiness until reaching home at 9 o'clock, when I found him to all appearance in much the same state as on the previous occasion. He was continually looking at his flanks, but never showed any violent paroxysms. Several ineffectual attempts to vomit were made; the pulse was 44, and very feeble; the breathing natural, and the bowels constipated. I gave him Aloës ʒv in solution, combined with an anodyne, repeating the latter every two hours; injected enemas, and applied stimulants to abdomen; but the symptoms continued much the same until 5 p.m. on the 6th, when the pulse began to increase in number. Death took place at 9 p.m. on the 7th; the pain at no time being extreme.

On making a *post-mortem* examination soon after death, it became evident at first sight that a rupture had taken place. The cavity of the abdomen, besides containing a quantity of fluid, held, perhaps, from twelve to fourteen pounds' weight of escaped ingesta, amongst which I found four live worms (*Lumbricus Ascaris*), averaging from nine to twelve inches in length, and an inch in circumference. I was much surprised also to see numerous bots so firmly fixed to the exterior of the intestines, that it was impossible to remove them without breaking their hooklets from their body. The rupture itself was a little over an inch in length, and situated at one of the convolutions of the colon major. The parts immediately around the orifice were in a partially disorganized state. On cutting into the intestine I found no signs of inflammatory action; the muscular coats, however, were extremely weak. The stomach contained three more worms of the same species as those exterior to the viscera; ulceration had evidently been going on near its pyloric orifice; both the stomach and fundamental bot were found in great numbers; the omentum was inflamed; all the other viscera were perfectly healthy, but showed signs of poverty, the animal being in miserably-low condition.

Taking into consideration the above facts, it is a question when the rupture had taken place. Had the worms been the cause of it? Both they and the bots attached to the intestines had evidently found their way through the aperture.

THE USE OF THE HYDRATED PEROXIDE OF IRON IN CASES OF POISONING BY ARSENIC.

By F. C. Boulter, Veterinary Student, Woolwich.

Thinking that the following facts will prove beyond all doubt the value of the peroxide of iron as an antidote to the effects of arsenic, I send you the particulars of the case, to which I was called on the 2nd of June.

Some pigs—numbering fifty-six at the time I saw them, upwards of ninety having previously died—the property of Mr. Thomas Smith, market gardener of Charlton, Kent, were believed to be suffering from the effects of arsenic, he having sent four which had died to the Veterinary College for analysis by Professor Tuson, who had, Mr. Smith informed me, pronounced them to have been poisoned with arsenic. Mr. Smith also told me that he suspected the poison had been given on the 19th of the previous month; if so, a fortnight had elapsed between that time and my seeing the animals. During this period, at all events, ninety had died, and the rest were in a very precarious condition. Being put in the possession of the above facts, I took steps accordingly, and administered the peroxide of iron (hydrated) in large quantities. The effect of this agent was no less remarkable than speedy, as the animals, which the previous day had been unable to walk across the sty without staggering and falling, now walked with a firm step, and ate up all kinds of food offered them with avidity, although during the previous week they would not touch anything. Seeing such good results, I continued to give the iron compound, and up to the present time, the 10th, only four more have died. The other pigs are improving every day. I opened the stomachs and also the large intestines of those that died, and found them highly corroded in patches, and, indeed, in some places quite eaten through. In addition to the peroxide of iron I gave the *Ol. Lini*, but I believe the good effects produced are mainly attributable to the compound of iron.

APPOINTMENTS IN THE INDIAN SERVICE.

By Hepatitis.

Dear Sirs,—I read with much pleasure the communication in your last number from "The Ghost of an Indian

Vet." Having had a little experience in India myself, I felt doubly interested in this letter. It will give the veterinary surgeons in England some idea of what they have to expect in India. I can confirm the statements made in almost every particular, and I think great credit is due to the "Ghost" for bringing the matter forward; and if what he has written only saves a few of our young vets. from going to a climate like India to be badly treated and cared for, besides having to incur the risk of diseased livers, fevers, and many other things not very pleasant to contemplate upon as being in store for them, he will deserve the thanks of every member of the profession. In England matters are otherwise, and a veterinary surgeon is much better off than in India. Any well-founded complaint will at once meet with the attention of our indefatigable principal veterinary surgeon; and if a veterinary surgeon-general was appointed by him to each presidency, we should soon hear no more grumbling from the "Ghost." As the matter now stands, there being no head to our department, and no one who cares about troubling themselves for the "poor vets.," we need not be surprised at the result.

I am, &c.

To the Editors of 'The Veterinarian.'

Facts and Observations.

The Rinderpest in Italy.—We learn that the *rinderpest*, which was introduced into southern Italy by some Illyrian oxen, disembarked either at Louciano or Foggio in the month of September last, is still prevalent in some parts of the kingdom. Its greatest fatality was reached in the months of November and December, but in January and February the extent of the malady had much decreased. From the statistics furnished by the prefects of the provinces, it seems that of 579 animals attacked 490 had died. The districts now affected are—the Abruzzi, the Campagna, and Calabria. The price of butcher's meat is said to be exorbitant in Naples in consequence of the existence of the pest.

A Handsome Reward.—Don Manuel Cussac, a Spanish veterinary surgeon, lately discovered a remedy for glanders, and founded an establishment in which were more than fifty glandered horses. He went to considerable expense in this

undertaking; and at last, as he had apprehended, took the disease himself and died. His exertions had been much approved of by the government, who, at his death, granted to his widow, with three children, one shilling and eightpence a day.—*Lancet.*

The Sleep of Plants.—The slumbering of plants is analogous to the sleep of animals. Their life-processes are still going on, but with less activity. Their whole system is relaxed. As soon, however, as the first rays of the sun strike the foliage, the chemistry of nature is again resumed in the laboratory of the leaf; each foliage resumes its allotted task in the labour of plant-construction, and the growth of vegetation within the enlightened portion of our planet steadily progresses. The sap ascends to the leaves with its wonted vigour; and the tissues of the plant being again filled with fluid and gases, the plants themselves naturally strive to take their greatest amount of rigidity and elasticity, their flowers open, their drooping leaves elevate themselves, and they recover all their lost energies.

Artificial Formation of Fibrin.—In a paper read by Mr. A. Smee, jun., before the Royal Society, he showed that if a stream of oxygen gas be passed through albumen, derived from the serum of the blood, or eggs, or gluten of wheat, portions of it become converted into fibrin. If, however, a small quantity of potash be introduced, fibrin is not formed. It has been thought that this discovery may throw some light on the phenomena of fibrinous diseases, as phthisis, peritonitis, and the use of potash therein.

Origin of Petroleum.—Dr. J. B. Edwards, in the *Pharmaceutical Journal,* states that the flow of oil from mineral springs is by no means new either to science or commerce. Herodotus has recorded that the island of Zante furnished large quantities, while Pliny and Dioscorides describe the oil obtained from Agrigentum, a small town in Sicily. The Persian springs at Bakoum have yielded to the value of 600,000 dols. annually; and the earth oil from Rangoon, in Burmah, has been exported to the extent of 400,000 hogsheads yearly. The streets of Genoa and Amiens were formerly lit by a petroleum obtained from Parma. In 1847 a spring was discovered in Yorkshire, which was successfully worked by Mr. James Young, of Glasgow, until exhausted, when he turned his attention to the distillation of coal, and discovered paraffin oil. The marvellous oil-springs of the New World,

however, far surpass in extent and interest all previous discoveries; and the quantity already yielded, without apparently diminishing the supply, shows that this will be a most important article of commerce for some years to come. In Canada the oil rises from the saturated corniferous limestones; in the States it is principally obtained from Devonian sandstones, while in Western Virginia and Ohio it rises directly from the coal-measures. In all cases it no doubt arises from the decomposition of coal by temperature and pressure, and is lifted by the percolation of water under it to cavities and fissures in rocks till it approaches the surface. It is generally accompanied by quantities of coal-gas.

Ergot of Wheat.—M. Leperdriel has proposed the employment of ergot of wheat as a substitute for that of rye. The reasons for which, as assigned by him, are, 1st, it does not undergo decay or change very quickly. 2nd, it contains 15 per cent. less of the poisonous resinous principle, and 20 per cent. more of the efficacious principle of the ergots.

Although ergot of wheat is less frequently met with than that of rye, nevertheless M. Tulause says it is not so difficult to obtain as many authors suppose. It is produced mostly in wet seasons, and always on that side of the ear exposed to damp.

Professor Bentley concurs in the long retention of the virtues of the ergot of wheat, as stated by M. Leperdriel; but he seems inclined to question its greater efficacy over that of rye; nevertheless, he thinks the profession would do well to subject them both to comparative experiments. He says that some years since it was tried with success in North America, and it seems probable that the ergot of all grasses possessed analogous properties.

Application of Dialysis.—This ingenious mode of separating substances, to which we alluded in a former volume, has been applied by Dr. Marcet for separating the salt from the juice of meat in brine. Large quantities of brine are wasted in curing establishments, and it is proposed that the juice of the meat, containing as it is known to do much nutritive matter, shall be used as an article of diet.

Professor Williamson, in a debate on the use of dialysis in microscopical observations, indicated a number of subjects on which he thought it probable that some light would be thrown both in vegetable and animal physiology, especially as seen in the development of the dental plates of the teeth

of the echinus, the shells of the mollusca, the scales of fishes, and the chondriform and membraniform bones and teeth of the vertebrate animals. He further suggested for inquiry how far the structureless basement membrane seen underlying the calcareous layer of many calcified structures (*e. g.*, the pulp membrane of the tooth) played some part equivalent to the parchment dialyser of Mr. Graham.

Bird Murder in Sussex.—The *West Sussex Gazette* mentions that on the 5th ult. the annual meeting of the Shipley Sparrow Club was held, and upon examination of the accounts it appeared that 3,099 sparrows and 3,262 other birds—total, 7,261, had been destroyed in the past year. Prizes were awarded to the three members who had destroyed the greatest numbers, and it was resolved to continue the club another year.

Birds as Destroyers of Insects.—A distinguished naturalist, M. Florent Prevost, conceived the idea that it would be a matter of great interest to collect, at different periods of the year, the stomach of every description of bird he was enabled to procure, to examine and preserve its contents. This collection, commenced thirty-five years since, has now reached a considerable size. The stomachs, opened and dried, together with their contents, are fixed on cardboard, upon which are inscribed, besides the name of the species of the bird, the indication of the locality and the date of its death, together with the names of the animals or plants which have been recognised as forming part of the contents of its stomach. It results from these researches that birds are in general far more useful than hurtful to the agriculturist, and that the mischief done at certain periods by the granivorous species is largely compensated by the consumption of insects they effect at other periods.—*Medical Times.*

Influence of Ozonized Air upon Animals.—Dr. Ireland says—"These experiments were most carefully performed, and all sources of complication avoided as carefully as possible; and, as I felt satisfied of their correctness, I saw no reason to sacrifice the lives of more animals in repeating them. I submit to the reader the following conclusions:—1. Ozonized air accelerates the respiration, and, we may infer, the circulation. 2. Ozonized air excites the nervous system. 3. Ozonized air promotes the coagulability of the blood, probably by increasing its fibrine. In the blood,

however, ozone loses its peculiar properties, probably entering into combination with some of the constituents of the circulating fluid. 4. Animals can be subjected to the influence of a considerable proportion of ozone in the air for hours without permanent injury; but in the end ozone produces effects which may continue after its withdrawal, and destroy life."—*Edinburgh Medical Journal.*

Arsenic in Commercial Preparations of Bismuth.—Dr. Herapath has found that the presence of arsenic is almost universal in the bismuth of commerce; it hence follows that the medicinal compounds of this metal are often contaminated with it. He proposes the removal of it by a simple process, namely, that of boiling the insoluble salts of bismuth with a sufficient quantity of solution of caustic potassa or soda, which will quickly remove the arsenic in a soluble form. A repetition of this may be found necessary.

London Well-water.—Dr. Letheby, in his report of the water-supply of the city of London, states that, from the water in the wells in the city being highly contaminated with organic matters, the poor have a wholesome dread of the city pumps, and resort to the drinking fountains instead. Of the thirty-six pumps in the city, there is hardly one which supplies a drinkable water. When examined in large volume it presents a deep sea-green tint from the quantity of organic matter dissolved in it, a quantity that in some cases reaches ten grains in the gallon; and the amount of saline matter is frequently above one hundred grains in the gallon. The nature of both the organic and saline constituents indicates most unmistakably the source of the supply. It has its origin in the porous soil which is saturated with the soakage from sewers, drains, and graveyards. Almost every well, indeed, has its speciality. Those in the neighbourhood of the markets are known by the soakage from the surface ground; the pump in Leadenhall Market, for example, is enormously charged with common salt from the pickled hides, which are exposed for sale upon the ground of the market. It is time that the water of the city pumps should be disused, except for the purposes of street cleansing, and that the filtered water of the drinking fountains should take its place.

THE VETERINARIAN, JULY 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

THE EDITORS IN SELF-DEFENCE.

We will extend the signature of "Nemo," and adopt the motto "Nemo mortalium omnibus horis sapit." And this might almost be accepted as a reply to his animadversions on what he has been pleased to designate our supineness and indifference; only we think we have something to say in explanation, which may weaken the force, if not remove his "soft impeachment."

"O wad some power the giftie gie us
To see ourselves as ithers see us."

First, we would observe that we are not in the habit of noticing anonymous communications. But there are times and seasons when the breach of a rule is honorable. Again, there are some persons who, "like the wind's blast, never resting, seem to be stormed across the war-convulsed earth," never easy, and never happy, unless in contention. Discord seems to be the only element in which they can live: they love strife.

It may be, however, that we should have taken no notice of "Nemo," did we not happen to know him:—at any rate we think we do. We are not conscious of having handled the balance deceitfully, and know it is held to be an "abomination." We are also quite aware that some have considered that, like Mohammed's coffin, we are suspended between two influences—those of Alma Mater and the profession; but we have always believed the interests of both to be identical. We deny the truthfulness of the accusation, that we have refrained from "speaking out" when circumstances demanded it; and if there have been "omissions allowed to pass unnoticed," it has been from a conviction that the time will come when these, too, will no longer exist. We have already witnessed such progress to have been made, that we are quite contented to wait a little longer.

Doubtless, therapeutics, including materia medica and botany, constitute an important part of the curriculum of the student of Veterinary Medicine, and the foundation is laid for the more extended investigation of these divisions of science. We must, however, patiently wait for the building thereupon of the superstructure, for which we hesitate not to say we think a division of labour is desirable. Other schools make this a separate section, then why not ours? It is a splendid field of inquiry, and a rich reward will be the cultivator's. But we must not be too hasty. "Rome was not built in a day." Patience accomplishes much, or sees its accomplishment. The development of truth is gradual. To ensure this both Philosophy and Science are called into requisition, but time must be allowed to perform its part. We live, as it were, at the confluence of many waters. Each stream seems more impetuous than its fellow, and we are oftentimes carried onward and onward and onward by the current, without any thought of our whereabouts. We do not think so deeply as we might, and by reflecting weigh the consequences. There is too much excitement, too much straining after novelty, too much claptrap, now-a-days. Let us, then, hold fast what we have, and look forward with anticipation for the future, our ground of hope being the good already obtained. It may be we are not ignorant of means to be adopted to accelerate the possession of the object, but we repeat we have confidence in the directing powers, and therefore wait. Long since we said we were neither iconoclasts nor sciolists.

As yet a well-arranged series of experiments, so as to ascertain the action of medicinal substances on the lower animals in health and disease, is a desideratum. These should be undertaken by persons in authority, and not left for individuals unconnected with each other to work out, which hitherto has been the case. Looking over the list of the many societies, we do not see a Therapeutical Society. Surely here is an almost untrodden field, and one full of interest.

We feel quite convinced that no one for a moment will question the importance of therapeutics as a branch of medical science. The treatment of disease may be said to

hinge upon it. However perfect a person may be in diagnosing a malady, if he knows not the remedy to be resorted to, so as to remove it or prevent its consequences, of what use is he? An acquaintance with the safe and proper drugs to be administered is paramount. There is therefore a necessity for a study of books on the agents employed constituting the materia medica of the Veterinary Surgeon. But this is not enough, he will have to acquire much from experience. There are certain diseases in which so large an amount of a therapeutic agent cannot be given as is laid down, arising from certain peculiarities in the system, and others in which a much larger quantity may be advantageously administered; then there is what is called idiosyncrasy, which sometimes altogether changes the action of a drug, so that careful observation is at all times called for in the employment of medicines.

Again and again we have expressed our conviction of the advantages that would result from a well-instituted inquiry as to the different action of medicinal agents on the lower animals. This may be designated Comparative Therapeutics. There are several valuable drugs the efficacy of which with us has been more than questioned. We might name opium and the potassio-tartrate of antimony, not to mention any others. Respecting these we may, perhaps, hold opinions different from others, for we contend the action of an agent cannot be satisfactorily ascertained if given experimentally to an animal in health. Well has Dr. Robertson said, "Disease both calls forth the powers and modifies the influence of medicines. That which agitates the calm of health may soothe the irritation of sickness, and that which, without opposition, is inert, may act powerfully when it meets with an opponent. Experiments, therefore, should be made on the sick in order to determine how the sick may be affected."

"Amicus Plato, amicus Socrates, sed magis amica Veritas."

It may be thought that an opportunity lately presented itself in the appointment of an examiner in these divisions by the Council, and we are inclined to concur in opinion with "Nemo;" but the time is not far distant when they

must be recognised. Till then wait. Patience will have its reward.

ON ACCLIMATIZATION.

Mr. Joseph Ince has written a paper in the *Pharmaceutical Journal* on the above subject, adverting principally to the Society of Acclimatization of Paris, from which we purpose to cull such particulars as may interest our readers, at the same time somewhat condensing them.

He commences by observing that—

"Ten years ago the subject of this paper could have been discussed only in the pages of a zoological journal; within this brief period the word Acclimatization has been invested with a far wider and truer meaning, and its study is connected with such a marvellous exhibition of progress, that no pharmaceutist should remain ignorant of its details. The term *acclimatize* has ceased to be restricted to the introduction of a new animal to European soil; what is its latter signification may best be gathered from the official records of the Imperial Society of Paris, of which there can be no happier summary than the opening speech of the president, Isidore Geoffrey Saint-Hilaire:

"'We wish to found an association, hitherto without precedent, that shall consist of agriculturists, naturalists, landed proprietors, and enlightened men, not only in France, but in every civilised country. Our design is to unite in furthering an object which truly needs the aid of every man, as it must conduce to the general advantage. It is no less than to people our fields, rivers, and forests, with new inhabitants; to increase the number of our domestic animals, that first source of riches to the cultivator; to augment and vary our alimentary resources, which are at present so insufficient; to create new economical and industrial products, and thus to endow our languishing agriculture, our trade, our commerce, nay, society at large, with benefits hitherto unknown or neglected. These blessings will be no less precious hereafter than those which former generations have bequeathed to us. Such is the work you have not feared to undertake, and I hesitate not to say that if few are so difficult, none could be greater or worthier the age in which we live—an age distinguished beyond all others for the splendid application of science to the welfare of the people.'

"These broad and enlightened views did not drop down upon Saint-Hilaire as a sudden inspiration; great men had been in the field before him ever since the time-honoured date of 1601, when Henry IV and Olivier. de Serres, in spite of the opposition of Sully, acclimatized the mulberry in France, introduced the silkworm, and laid the foundation for the lucrative industry of Lyons.

"More recently a great writer, and yet a practical man, broke through the routine monotony of the schools, and had his share in giving vitality to abstract science—this was Buffon.

"'We are far, very far,' said he, 'from using all the riches nature offers. She has given us the horse, the ox, the sheep, and all our other domestic animals for our use, our nourishment and clothing; she has yet other species in reserve to supply their lack; it is for us to tame and render them subservient to our wants. Man knows not sufficiently what nature can effect, nor his power over nature; and instead of seeking that of which he is ignorant, he turns into abuse the very knowledge he possesses.'

"Not content with theories or generalities, Buffon was no sooner made director of the Jardin des Plantes (then called the Royal Garden of Medicinal Plants) than he set to work to change and amplify its whole organization. At this time it was nothing but a botanical garden, reserved exclusively for the cultivation of medical plants. 'For a century,' writes M. Drouyn de Lhuys, 'no one dreamt of giving it any other destination.' Buffon determined that it should be consecrated to the practical and theoretical study of all the productions of nature. But as this gigantic plan could not be successfully attempted by one single hand, since it would not be possible for an unaided worker to cope with its multifarious details, he chose (and the selection was most happy) two admirable assistants—Daubenton, to superintend the animal, and André Thouin the vegetable, kingdom. To these three we owe the creation of that magnificent establishment, the Museum of Natural History. Now mark the heritage of a great thought. Buffon, himself a genius, chooses two men, Daubenton and André Thouin, who both live to be known to fame. Daubenton, finding the details of his work beyond his grasp, chooses and adopts, as his own son, Etienne (Stephen) Geoffroy Saint-Hilaire, who in turn, while yet a student, creates the Menagerie of Acclimatization (1793), whilst his master gives to France the race of merino sheep. Sixty years later, the son, Isidore Geoffroy Saint-Hilaire, inaugurates the Society of Acclimatization."

To this succeeds a highly interesting history of the family of Saint-Hilaire, in the list of whose writings Mr. Ince says—

"One has been intentionally omitted—'The Domestication and Acclimatization of Useful Animals.' This being the grand point towards which all his investigations bore reference, the book itself brings us directly in contact with the subject now in hand. Up to this time zoology had been too often considered a mere elegant accomplishment, fit to amuse the leisure of a contemplative philosopher and otherwise to improve his mind; it was now shown to have great utilitarian results, and that it might be presented in the shape of tangible advantage. Had Geoffroy laboured under the deep misfortune of being what is termed an eminently practical man, he might have lived content with the usual occupants of a farmyard, and been thrown into ecstasies on the arrival of an additional calf. As it was, by taking higher, nay, indeed, the highest ground, he made his abstract studies subservient to the daily purposes of life. He did more, for he developed the resources, added to the convenience, and contributed to the commercial interests of his country as much as the most prosaic member of the community. As yet we can notice but the dawning influences of his discoveries; his real title to honour will be the future.

"The first positive result of his teaching was that it of necessity involved this fact, that zoology, as a science, if meant to be studied in its widest and broadest meaning, cannot stand alone. If by zoology he meant a catalogue of various animals, each ticketed with an appropriate label, to which catalogue be appended a string of observations more or less correct, then of a truth it may be studied, as Goldsmith once wrote about it ('Animated Nature') in the quiet of a parlour library; but if zoology be meant to be something more than a theoretical routine book-classification, and have to include a personal and positive acquaintance with the habits and application of animal life, such as Buffon was the first to indicate, then we shall wake up to the reality of the pursuit; we shall need explorers, active and intelligent travellers, trusting to no other page than that of nature, to see where these animals are, how they exist, what they do, what they produce, and whether it be not possible to utilise the knowledge gained by introducing these same animals to do the same work at home. The idea was at first deemed romantic, but it resulted in the establishment of the Zoological Society

of Acclimatization, which was founded February 10th, 1854. Geoffroy Saint-Hilaire was chosen president.

"That the object was worthy the attention of a true philosopher will appear from a moment's consideration how miserably we should fare in Europe were we compelled to trust to our own national resources; once more we should have to dig up acorns, and to live by the produce of the chase. The vine comes from Asia Minor; the Romans brought as the spoils of war the peach, the cherry, and the apricot. Strange to say, no sooner did the Romans cease to be aggressive than they went back in civilisation, and even lost their previous acquisitions. But, on the other hand, the Arabians established themselves in Spain and in the south of France, bringing thither, not only cotton (which they were the first to introduce), but the plants used at the present day in dyeing and in medicine."

Subsequently the society received the especial patronage of the Emperor Napoleon, under the title of Imperial Society. It has members residing in every part of the globe, and has done much towards the introduction of useful new plants and animals. Since then, too, similar societies have been established in London, Glasgow, Palermo, Melbourne, and Sydney.

"As an incentive to individual exertion, the society offers three classes of rewards, open to universal competition. The prizes are awarded, irrespective of membership or nationality, to any one who shall have merited the distinction—

"I. For the introduction of species, races, or useful varieties, whether of animals or vegetables.

"II. For the acclimatization, domestication, propagation, and amelioration of species, races, or varieties, whether animal or vegetable; whether, secondly, adapted for useful employment, or simply accessory, or for ornament.

"III. For the application, agricultural, industrial, medicinal, or otherwise, of animals or vegetables recently introduced, acclimatized, or propagated; or of their products. Encouragement by way of gift or prize is also offered for successful service rendered by those employed by the society, in addition to any salary they may receive."

Surely in all this there is much that is suggestive and highly commendable, while it comes home to us as a profession, calling upon us for co-operation.

Extracts from British and Foreign Journals.

ON THE BREEDING OF HUNTERS AND HACKS.

By Henry Corbet.

(*From the New Part of the 'Bath and West of England Society's Journal.'*)

Perhaps the best introduction to this paper would be a reference to the prize-sheet of the approaching Exeter Meeting of the Bath and West of England Society, where two handsome premiums appear for "thorough-bred stallions best calculated to get hunters and hacks." In a national point of view, the good policy of calling more attention to this subject cannot for a moment be questioned, while the duty of doing so comes quite as legitimately within the scope of an agricultural association. All the rest of the world is even more inclined than ever to turn to us for their best horses, as for their best cattle or sheep. There is, in fact, no breed of animal that commands so ready a market as a good riding-horse; and yet, strange to say, there is no other branch of buisiness so fortuitously suppled. Saving in Yorkshire, Lincolnshire, and parts of "the shires," the breeding of horses is mere chance-work; and the very gentlemen of the district, when they are in want of a promising hunter or clever hack, have but too often to import him from elsewhere. The mere rumour, indeed, of a smartish four-year-old will bring Mr. Oldacre or Mr. Weston some two or three hundred miles specially to look at him; and dealers and their agents now attend our great summer shows almost as regularly as they do the autumn fairs, just for a glance over the hunting classes, already so attractive a feature in the proceedings.

And yet farmers will tell you that, as a rule, breeding "nags" does not pay; as, under the circumstances, it would be rather a curious thing if it did. As a rule, breeding such stock does not answer, because they are bred without any rule at all. In these days, if a tenant wishes to rear a good beast, he takes especial care to secure the services of a good bull, as with the same ambition he will bid up for a Cotswold shearling or a Southdown ram. If, moreover, he really means to succeed, he will be almost as scrupulous in

selecting a dam, and, thus provided, he gives the principle he is testing a fair trial. But take the case of rearing a riding-horse, and how does the self-same man proceed? In nine times in ten "just anyhow." He puts anything he may happen to have with anything that may happen to come in the way. As often as not, he scarcely looks at the horse he uses, but takes the word of some roving blacksmith, or broken-down coper who travels the country with an animal "best calculated to perpetuate the breed" of weeds and screws. Then the foal, when he does come, is cultivated much after the same fashion, or, that is, left pretty much to shift for himself. You will see him fighting for his own in the farmyard amongst a lot of store-bullocks, as likely as not with a hip down, or a hole in his side, from the thrust of a playful Hereford, and doing as well as he can on that grand specific, a due allowance of bean-straw. The result of this wonderful system is surely logical enough. At a year old the young nag is a half-starved, sulky-headed, big-bellied, narrow-framed thing, with most probably a blemish or an eyesore of some sort to complete his personal appearance, and with a general expression and carriage as lively as that of Rosinante, or Doctor Syntax's Dapple. Very naturally the breeder of such a prodigy is more than anxious to sell him, but quite as naturally can find nobody willing to buy him, until, without heart, mouth, or action—under-bred, under-fed, and half-broke—the butcher gets him thrown in with his next half score of beasts, or the village apothecary, on the spur of some hapless moment, is brought to believe that the colt may *suit* him! And thus it happens that breeding nags does not pay—with rather less outlay and attention devoted to such a business than one would bestow on a sitting of Cochin-China eggs or a litter of terrier puppies.

It may be argued fairly enough that a farmer does not and cannot make the same wholesale busines of breeding hunters and hacks as he does of produeing cattle and sheep. Still anything that is worth doing at all is worth doing well, and this might be put yet more emphatically in a pecuniary point of view. There is scarcely an occupier of any position but who has always a goodish animal or two that he jogs round his farm, drives in his dog-cart, or, to say it out, rides with the hounds. Let these, or some of them in continual succession, be mares that from use, age, or accident, get beyond their work, and what then becomes of them? Their owner cannot sell them, and he will not kill them; so that almost as a matter of course and necessity he proceeds to

breed from them. Let us not stay here to inquire whether they be just the sort of thing for such a purpose; but let us, as the initiative, follow out the line of the society, and show our friend that he should do, in contradistinction to that he too commonly has done. The great improver, then, of his species is the thorough-bred horse; and as a maxim, if you expect the produce of the half or even three-parts-bred mare to be worth rearing, you must put her to a sire who is as pure bred as Eclipse himself. There may be occasional exceptions; but these are not to be trusted nor taken as precedents. A country mare crossed by a cocktail stallion may now and then throw a good hunter; but we shall generally find that such cocktails are as nearly thorough-bred as possible, and, after all, it is safer to keep to the genuine article. I cannot here but congratulate the council of the society on the wording of their conditions for this class, as not admitting of the qualification of a half-bred horse to get good hunters, or even clever fashionable hacks. When, certainly, we see a fine powerful three-parts-bred horse, with plenty of substance and style about him, a good head, fine shoulders, clean hocks, and so forth, we feel willing enough to have a few more like him. But in this case we have a very forcible illustration of the fallacy of a proverb, for "like does *not* get like." Put the clever three-parts-bred stallion to the equally clever three-parts-bred mare, and can we do so with the assurance that they will reproduce anything as good as themselves? Most decidedly not. The great point, the very foundation of the personal excellence of the animal we have before us, centres on his being by a thorough-bred horse—a recommendation of which his own stock in turn would be as signally wanting. Nothing can be finer, as the experience of our last Christmas shows went to prove, than the first cross between the shorthorn bull and the Aberdeen cow; but what would be the result of crossing these crosses? Disappointment, uncertainty, and a thorough sacrifice of all purity of type, either from one breed or the other. A man who went on in this way for generations might eventually do something towards establishing a new variety of breed; but this, with such sorts as the shorthorn and polled, already at our hand, would be scarcely worth the time and trouble; and I am not very sanguine of any enterprising individual inventing a better material for making a hunter than he can get direct from the thorough-bred horse. What are the three great essentials of the modern hunter but speed, power, and courage?—and where shall we get these but direct from the thorough-bred sire? There is nothing

less warranted than the supposition that the English race-horse has deteriorated in strength or endurance. If you begin galloping him at a year and a half old, to wear him out in running and "trying" before he is three years old, and his limbs set and his frame furnished, this is no proof of all he might have been had his powers been husbanded, like those of his ancestors, any of which, under like circumstances, he would have fairly distanced over a four-mile course. *Pace* is now the password of the chase, and the best hunters in Leicestershire, either for fencing, weight-carrying, or stoutness, are, and long have been, purely thorough-bred. These are the horses that make money, and next to these the three-parts-bred, by a thorough-bred stallion out of a well-bred mare.

But Jonas Webb, even at the acme of his success, culled his rams, and many a shorthorn that we never see has, like Brummel's neckcloths, been fastidiously put aside as "a failure." With the thorough-bred horse, however, it is not so; here, unfortunately, there are no failures. Those of the highest degree go to our famous turf studs, to serve at their fifty or thirty guineas; others of almost equal excellence are eagerly bought up for the foreign market, while many of a similar stamp are put at prices varying from ten to twenty guineas. Such horses are all beyond the farmer's reach; but instead of looking for something in the next degree—and that, without the charge for mere fashion or high performance, might well answer the object—our breeder is too often content with the very worst of cast-offs. People who live by travelling stallions are not often men of much capital, and they go, as a consequence, more for a cheap horse than a good one. With a flaming card of all a great-grandsire has done, or what this very horse may have accomplished over a short course at a light weight, they associate an animal whose appearance alone should condemn him—narrow, weedy, and leggy, with scarcely a point in his favour for getting hunters, and very possibly full of all sorts of defects, natural and otherwise. The fee still is a small one, and so the mischief is done. A man pays twenty-five shillings where five guineas would have been a saving, and the thorough-bred horse gets a bad name, plainly and very palpably, if a customer would only make use of his eyes, from being unfairly represented. Considering the infinity of good or evil they are capable of producing, it is really a question whether horses should ever be allowed to travel without a license, the more particularly when we see how few people take the trouble to judge for themselves. It is said that every En-

glishman is either a judge of a horse or thinks he is; but one can scarcely credit this when we find such a number of weeds and cripples year after year earning incomes for their owners. Although nag-breeding may not pay, it is remarkable how many men still continue the unprofitable pursuit.

And now as to the remedy. The notion of encouraging farmers to breed a better sort of horse is by no means a novel one. The offer comes, in the first instance, by way of some recompense for the privilege of riding over their land, or to ensure their goodwill for the hunt. Hence we have Farmers' Plates and Hunters' Stakes, neither of which can be said to have thoroughly answered their object. The so-called hunter, just "qualified" by showing at the cover-side a few times, and then went back to lead gallops for a Derby favorite, or to vary his performances in the field by winning a Royal Hundred. The Farmers' Purse, given by the gentlemen of the hunt, has been often enough still further from its original intent. A sporting innkeeper or a hard-riding townsman would just "qualify," again, by taking the requisite number of acres of ground, and bargaining for a plater in due time previous to the race coming off. Then, by the aid of a *quasi* gentleman-rider, who could sit still at a finish, the "*bonâ fide* farmer" Boniface would pocket the purse, as the donors looked on year after year in glum disappointment, murmuring occasionally to each other that this was not exactly what they meant either! Perhaps, however, next to losing, the most unfortunate thing that could ever happen to a real tenant-farmer was to win one of these same Farmers' Plates. It has given more than one man of my acquaintance his first taste for the turf, another result as little intended by the founders of the prize. Still, let the members of the hunt not yet altogether despair of what they may do in this way. Of late years the purse has taken a far more popular form, and in place of being contested as a plate on a race-course, it is now offered as a premium on a show-ground. To the growing interest and success of such a system I have already spoken; but we have scarcely yet got so far as the show-ground. Before we venture into public, we must see if we cannot set to work and breed something fit to place before the judges. And here, too, the hunt may help up. Let it be admitted that, in a free country like this, the licensing plan would hardly be practical, and that any man may still "travel" any brute he chooses. Surely the fitting way to meet him will be to start a better horse in opposition. Let the master and the managing committee of the county fox-hounds make it part of their

business to see that the district is never without the command of a good, sound, thorough-bred stallion, "calculated to get hunters and hacks." Let such a horse, if necessary, be even the property of the hunt, to stand at the kennel stables; and let him, moreover, serve farmers' mares at a certain moderate figure. Never, however, under any circumstances, let his favours be given gratis; for people are very apt to estimate that which they get for nothing at what they pay for it, and such a practice would only tend to make men more careless over a matter which they are only too indifferent about as it is. The principle I would here recommend has already been tried. It was only within the last year or two that I was staying with a friend on the borders of Shropshire, who was then looking out for another such stud-horse for the country, as they had just lost the one they had been using for some seasons. Baron Rothschild, who hunts the vale of Aylesbury so handsomely, takes especial care that a thorough-bred one is ever within the graziers' reach at Mentmore; and the Duke of Beaufort has now always a stallion which serves mares within the boundaries of the Badminton, at a trifle over a merely nominal figure. I had the honour last autumn of awarding his grace's premiums for the best yearlings by his Kingstown, as well as for the best mare with a foal at her foot by the same horse, when the following suggestive incident occurred. The prize for the yearling went to a really bloodlike filly, with fine free action to back her appearance. In the course of the morning I was accosted by her owner, a perfect stranger, who after a word for the young one, added, "But you would not give her mother a prize, sir." I did not know that I had ever had the opportunity of doing so, until my new acquaintance explained to me that she was in the brood-mare class, acknowledging at the same time, "I know why she did not get it; she is not quite well-bred enough." And he was right. She was not well-bred enough nor active enough to be either first or second of her order; and that wonderful nick with the thorough-bred horse had done it all —a fact which even a possibly partial owner saw as plainly as I did.

This brings me to another branch of my subject. Having secured the use of a good promising horse, let us as early as possible go on to prove him. The four-year-old hunting class is the favorite one at our agricultural meetings; but I am not quite sure but that the yearling and two-year-old classes are not more advantageous in their effects to the breeders. In the first place, if a man has a tolerably good-

looking foal, he may begin to keep him rather better than I fear many farmers are inclined to, if he thinks of exhibiting him as a yearling. Then, if he so chooses, this said exhibition may be something of a market. It is not every man who has the time or ability to "make" young horses; and there is always some risk in breaking, and so forth. A fair offer should consequently seldom be refused, especially if it comes at an early period in the colt's career; but this is a part of the business, again, that agriculturists are scarcely up in. If they have a good-looking one, they are terribly apt to overstay their time with him, and to keep him about home until he gets thoroughly blown on. A dealer has the opportunity of shifting a stay-maker that no farmer can possibly command; and even, further, this "making" of a hunter of a very necessity implies a deal of knocking about. A friend of my own once refused an offer of between two and three hundred guineas for a prize two-year-old from a neighbouring master of hounds, only to keep him on until, from a series of mishaps, the chestnut horse became almost unsaleable, aud never afterwards worth a fifth of what was first bid for him! Others will become yet more enamoured with their own, and turn all their geese into ganders. Such a man will look at his colt till he finds him to be too good either to ride or to sell; and the coarse, fleshy, cocktail country stallion is the consequence. His owner's immediate influence in the neighbourhood is sure to get him some mares, and as he has never done a day's work in his life, he is possibly free from any very visible strain or blemish, a point that is equally certain to be made the most of. It is almost needless to say that the presence of such a stallion does infinite injury in a district; and if the weedy thoroughbred should not travel without a license, it would be advisable to put down such an animal as this other one by Act of Parliament. Some gentlemen, without any of the direct call of the M. F. H., will offer their friends the example of a proper model of their own freewill. An enthusiast like Mr. Pishey Snaith, with a horse so well selected as old Theon—Captain Barlow, with Robinson, replaced by Middlesex—and, I must add very appropriately here, Captain Watson, with the Bishop of Romford's cob, followed by Hungerford—must inculcate a most useful lesson in their several districts. Theon did wonders in this way about Boston; and, despite their vicinity to the capital of the turf, the farmers of Suffolk, until within a very few years back, were quite willing to try and breed a hunter "anyhow," and from anything that came in their way. The improvement, thanks to the opportunity at Has-

keton, I can say from personal observation, is very remarkable; while the Devonians must know better than I can tell them how much they in turn owe to the Dorsley Stud Farm, which I had the pleasure of inspecting a year or two since. I have also seen the beauties of Mamhead, where a similar principle is upheld; for though the illustrious Gemma di Vergy may be beyond our reach, I am glad to hear that since I was there Sir Lydston Newman has provided a second horse with such good stout blood in his veins as the Dupe, who will, no doubt, come within the farmer's figure.

It will be gathered that the point of this paper is a reliance on the use of the thorough-bred horse for improving our breed of hacks and hunters. Other crosses, with the *sine quâ non* of purity on one side, are of course available, such as putting the cart-stallion on to the blood-mare; but these extremes rarely meet or "nick," and are not to be recommended. A better plan would naturally be to associate the thorough-bred dam with the cocktail sire; but this, so far as the tenant-farmer is concerned, is practically impossible. It would require far too large an outlay to buy in the stamp of running mares fit to breed hunters from, and we must be content with what I believe, after all, to be the very best means for the purpose. No animal leaves a stronger *imprimatur* of himself than the racehorse; and though he may not be big and bulky, he will often throw back to more size and power. The cross put the other way is not common, neither can I remember any such striking examples of its success as, even if possible, to warrant its more general adoption. Nearly all our best steeple-chase horses, if not themselves quite thorough-bred, have claimed thorough-bred sires; and I may cite an example in this way that came personally under my own observation very early in life. My father had for many years in his stud a thorough-bred mare called Pintail, by Pioneer, that, just towards the close of her career, threw that famous steeple-chase horse, "The British Yeoman," by Count Porro. Her previous produce, however, had been anything but superior, and as a chance for imbuing them with a little more stoutness and substance, she was put one season to a good-looking three-parts-bred stallion that was travelling in the district, the result being unquestionably the veriest weed of the whole family. As for the Yeoman himself, light, wiry horse as he was, nothing but his pure lineage could have carried him through dirt and under weight in the way it did.

(*To be continued.*)

ORGANIZATION AND LIFE.

From the earliest ages of speculative thought, the human mind has occupied itself with the vast and perplexing questions of organization and life; but notwithstanding centuries of experience to show the proper limitations of such an inquiry, it is still rare to find a writer or an investigator who will adhere to an inductive method, and abstain from mingling the guesswork of mere hypothesis with the pursuit of experiment or the elucidation of fact. An inquiry into organization necessarily belongs to the domain of physical science, and demands physical methods of procedure, which are incapable of dealing with elements of a purely metaphysical kind. Physical science reveals a wondrous order and harmony of forces and arrangements, extending through all the time and all the space with which we are acquainted; and as our minds take cognizance of such facts, we are irresistibly led to the contemplation of an intelligent first cause. Let us, however, distinctly understand that it is not a mechanical process, a chemical process, or a physiological process, that conducts us to this result; all that the physical sciences do is to give us information, about which we cogitate according to the laws of thought, and thus arrive at a perception of their connection with a class of powers that no physical methods can reach. The apparatus of the chemist, the scalpel of the anatomist, the microscope of the minute inquirer, or the telescope of the astronomer, cannot be employed without displaying to us the results of will, intelligence, and design; and yet it cannot be said that it is through them that we learn the primary truth concerning the source and origin of all the phenomena which nature presents. An inquiry into life requires the combinations of physical and metaphysical methods, because under the term life we include things which differ as widely as human emotion and the development of an egg. We say life is one, and we say nature is one, but we do not mean to assert that there is no difference between a granitic mountain and a shooting star, nor ought we to forget the distinction that separates the function of digestion from an impulse of the mind. To call life a *principle* is to place ourselves on the highroad to confusion, because we start with a definition which assumes a knowledge that we do not possess; and we moreover jumble together a variety of causes and effects.

A principle means a *beginning* of some kind. The principles

of a science are those elementary facts and conceptions which form its foundation. In another sense, a principle is a first cause. We likewise find that principle is often used to signify not a sense, but a nonsense, and thus we hear of the "electrical principle" the "caloric principle," the "vital principle," or any similar phrase intended to give ignorance a learned look. If we take life to mean all the acts and properties exhibited by living beings, our first business is to separate them, and study each class in an appropriate way. The phenomena that belong to physical science will have a physical cause for their appearance; and a physical cause is not a volition, or an intelligent power, but simply a condition, or assemblage of conditions, that are invariably followed by another state of things that we call an effect. If we ask why there is this invariable link between certain antecedents and certain consequents, physical science cannot tell; and it is a metaphysical science that resolves the difficulty by pointing to that intelligence which is the great cause of all.

Those who are curious to study the history of opinion on the question of vital manifestations will find it ably traced in Barclay's 'Life and Organization,' and it is interesting to note that, so early as Empedocles, a bold effort was made to avoid the confusion into which investigators are still apt to fall. According to that philosopher, every animal possessed a rational and a sentient soul, the former derived from the gods, the latter from the four elements of which it was imagined that the universe was composed. In this rude hypothesis there is an attempt to separate the phenomena of organic life from those of consciousness, which we do not find in M. Bouchut, the latest writer on the same subject, who tells us that "by *vital force* matter *feels, moves,* and assumes *forms* more and more complicated, from the creation of vivifiable organic matter to the most completely organized being." This same "vital force" which has bewildered so many subtle heads, M. Bouchut considers he has "demonstrated" to be "extra-organic," and he calls it "an *intermediary of the soul*,"* whose mysterious union with the body represents the entire being. Plunging thus headlong into conjectural metaphysics, we are not surprised to be told that "life creates in each species of creatures the special organs that are to serve as the instruments of its activity. The functions create the organs, and after that all goes on by the mediation of physical laws." We hope this learned professor does not represent the condition of French intellect dwarfed

* "Intermédiaire de l'âme."

by Napoleonic despotism; but we read with astonishment his arguments to prove the strange theory we have announced:— "All vegetables and animals *feel*," so runs the book, and they do this "with or without organs of sensibility; they all *breathe*, but with different organs of respiration, from the plants which have no respiratory apparatus, and certain animals that breathe through all their tissues, up to insects which respire through tracheal tubes, fish that have gills, and birds and mammals that possess lungs." "Here is a fact," exclaims our author, "which proves against those who contend that the organ creates the function; and it is infinitely more true to say that the function creates the organ." Whether the animal be a simple polyp or a complicated man, the function is not performed until there is an organ to perform it; the difference is that in the higher creature an immense advance has been made in the adaptation of a special structure to a special use.

Even apart from intellectual manifestations, it is clear that the living beings do things that are not done by inorganic matter; but we are not entitled to ascribe the whole assemblage of such acts to a "vital force," or some entity totally distinct from any physical force; nor should we say that "when once *life is incarnated in matter*, it produces effects which in their turn act as causes," and so forth. We can trace the circumstances under which an animal lives, but, apart from religious ideas, we have not the faintest conception of *why* it lives, nor will physical science help us in the research. In his great work on 'Logic,' John Stuart Mill remarks that, although it would be an important addition to our knowledge, "if proved, that certain motions in the particles of bodies are among the *conditions* of the production of heat or light; that certain assignable physical modifications of the nerves may be the *conditions*, not only of our sensations and emotions, but even of our thoughts; that certain mechanical and chemical *conditions* may, in the order of nature, be sufficient to determine to action the physiological laws of life;" still, "it must not be supposed that by proving these things, one step would be made towards a real explanation of heat, light, or sensation." In the same spirit, Bacon warns us "not to suffer the understanding to jump and fly from particulars to remote and most general axioms (such as are termed the principles of arts or things)," and he adds, "we must not even add wings, but rather lead and ballast, to the understanding, to prevent its jumping or flying, which has not yet been done; but whenever this takes place we may entertain greater hopes of the sciences." Had M.

Bouchut followed the Baconian advice, he would not have told us that the "three attributes common to everything endowed with life are—(1) *impressibility*, or the unconscious faculty of feeling external impressions without any participation of the nervous system; (2) corpuscular movement, automatic movement, or *autocynesy*, that is to say, the faculty possessed by the elements of living matter to move themselves in order to form species, and to do this without dependence on the properties of any structure;* (3) *promorphosis*, or faculty of giving to amorphous elements a form determined beforehand, and conformable with the type of the species." An "unconscious faculty of feeling" is not intelligible; a faculty or facility, for the words are the same in origin and meaning, can be neither conscious nor unconscious, and an unconscious feeling is no feeling at all. In describing the second alleged property of every living thing there is equal confusion. What is meant by the "elements of living matter"? Are the atoms of oxygen, carbon, and so forth, declared to possess an automatic power, independent of the structure to which they belong, "to move themselves in order to form species"? "Impressibility" is affirmed to be "an attribute of life which exists in all tissues, which it animates independently of their textures." The physiologist does not know life apart from some living thing, and when a writer addresses us like M. Bouchut he is substituting metaphysical guess-work for scientific fact.

Life, as we know it, consists in actions that are obviously physical, and in operations that bear no analogy to any physical process. It is probably a complete mistake to represent life as controlling or resisting mechanical, chemical, or electrical forces. While an animal lives, its tissues are built up and taken to pieces according to a regulated method which is compatible with its continued existence, but all the physical operations of its life proceed in strict accordance with physical laws. If its albumen does not coagulate at a temperature that causes other albumen to undergo that change, it is not because a mysterious "principle" determines otherwise, but because the chemical conditions of coagulation exist in one case and not in the other. The power of maintaining heat is purely physical, and combustion follows the same laws in the body of the man as in the furnace of the locomotive. The power of resisting heat is equally physical, resulting from evaporation and other processes which experimental science can trace. When the body is dead, the

* "En dehors de toute propriété de structure."

amount and direction of the forces is altered, and then, of course, the changes that ensue are of a different kind. It is incorrect to say that no change has taken place except the escape or departure of an immaterial principle. The nerves no longer transmit, nor do the nerve-centres generate, those physical forces that determine the actions of structure that is alive. Dr. Lionel Beale discovers a complete circuit in the nervous system, strengthening the analogy with phenomena of an electrical kind. Other physiologists trace a connection between the consumption of phosphorus and the amount of thought performed by the brain. Here we have two sorts of incidents, the connection of which no physical investigation can elucidate. The changes in the brain, and in the secretions, no doubt, follow chemical and other physical laws, and are simply the results of the direction and intensity of forces of the same character as those which preside over the material world. They thus form fitting subjects for the research of the physiologist. But when we arrive at the question of why thought is connected with a brain, and why changes in the condition of that brain precede or accompany mental manifestations, our inquiry belongs to a totally different sphere. No polarization of particles, or oxidation of phosphorus can help us here. The ultimate cause is the will of Deity; and if we seek for more we must do so in the direction of utility, and correspondence with that great scheme of creation of which so small a part is unfolded to our gaze.

Let physical science give up the search for the *why*, and tell us *how*, the universe proceeds. We start, and we conclude, with the conviction that an Intelligent and Benevolent Will is in all and over all; and in tracing the wonderful operation of what we call secondary causes, we exalt our conceptions of the only real cause that animates and guides the mighty whole.

ON THE SUPPLY OF HORSES ADAPTED TO THE REQUIREMENTS OF THE ENGLISH ARMY; WITH NOTES ON THE REMOUNT SYSTEM IN THE FRENCH ARMY.

By J. Wilkinson, Veterinary-Surgeon-General.

(*Continued from p.* 234.)

The most prevailing defect among horse-breeders is a want of sufficient care in procuring good mares to breed from. One method of securing a satisfactory dam may be safely

recommended. Suppose some fairly satisfactory mares have thrown fillies (which is generally a disappointment), let these be well fed, and put to the horse at three years old. Experience will soon enable you to decide between them which is best adapted to become a permanent brood-mare. Each one of them will give you a tolerable foal to pay for her keep, and will herself have gained in frame and substance; her year of repose will have much more than compensated for the healthy demand made upon her constitution by bearing and rearing the foal. The less satisfactory mares will then be of the right age to be sold for the military service, for which more mares than horses are purchased for the cavalry, though in the artillery a gelding has more decidedly the preference.

With other stock, that desideratum, an increase in price, seems to be at once responded to by improved supplies; and we feel at a loss to account for the exceptional supineness or want of skill which cannot be tempted even by that bait to the display of more energy in horse-breeding.

If the farmer were more successful, his better fortune would be reflected upon the mounted part of our army, for the raising of the value of his produce would inevitably lead to an advance in the Government allowance; and although we do not suppose for a moment that his produce would ever sell for the factitious prices (ten to fifteen hundred guineas each) which are realised at one or two of the annual sales of blood stock, yet we think that by more attention to conformation, action, and age in the parents, and by the discontinuance of the practice of leaving the produce, when weaned, to eke out an eleemosynary subsistence on the marsh or moorside, breeding horses for general purposes might be made a more profitable occupation than it appears to be at present.

Mistakes sometimes arise because the quality of a horse is thought to be discovered while he is yet very young, and he is either pampered or half-starved, according as he may be considered prospectively capable of splitting a Leicestershire "bullfinch" or an enemy's squadron. And hence the cavalry often gets a thin horse, which, when properly nurtured in a regiment, developes qualities that, as the "best-mannered horse" in a crack dealer's hands, would swell the tens he cost into hundreds.

The Remount System in the French Army.

The state of the market for horses in France differs very materially from our own, the State being there not only a

more important customer, but having entered into or forestalled competition to some degree as a breeder. Of the royal establishments of brood-mares formed some years back, some have of late been abandoned, and others restricted or threatened with dissolution, probably from the results produced not answering expectation; and the Government seems more and more disposed to rely on the general market for a supply, and to encourage it by a steady system of purchase rather than by direct subsidies.

The following information, condensed from an official report on the Remount System in the French Army, may afford some useful hints for our own consideration. In France, as among ourselves, the general insufficiency of the supply is complained of, and an explanation found in the fact that the price of the horse has not risen in the same proportion as that of the bullock.

On this point Count Roche Aymon wrote as follows in 1828:—"Before 1791, 400 or 500 francs was paid for a Limousin horse two and a half years old, and a pair of oxen were sold for from 300 to 400 francs. Nowadays these oxen are sold at from 700 to 800 francs each, and horses four or five years old sell for 400 or 500 francs;" and it is remarked that if these figures are not quite correct, yet their proportions are preserved in the returns of actual commerce. There is, therefore, more advantage in producing horned beasts than riding-horses.

The insufficiency of the supply is no new complaint, since in the time of Colbert one hundred millions of pounds were exported to pay for horses, and proportionally as much since that period.

The deficiency is by no means equally distributed between the different classes required for the use of the army; for whilst artillery horses and mules for draught, finding always a steady market, independent of the Government, for home use or even for export, are always in fair supply without any special encouragement (and, indeed, in spite of the attempts made to foster other breeds exclusively) of riding-horses, such as are required for light cavalry, there never is much choice. The French generally are not a riding and driving community like ourselves, therefore the number of saddle-horses there bred will chiefly depend on the encouragement given by the requirements of the army, and on the sufficiency of the price there paid to meet the average cost and risks of the breeder. Much stress is therefore now laid by some of their authorities on regulating the Government demand, and, if possible, announcing beforehand its probable extent. It

has fluctuated from 20,000, 30,000, 40,000 in a year, to scarcely more than 2000 or 3000, and it is asked, if the breeders have on hand and wish to sell 12,000 or 15,000 riding-horses in a year, when the State, as we have seen, may only purchase 500 or 1000, what is to become of the others? "The coach contractor prefers for his work a Percheron horse at 1000 francs to a saddle-horse (Merlonese) at 6000 francs, or a Breton horse at 500 francs to a Limousin at 10,000. Therefore, horses designed for the cavalry cannot be sold for other purposes without loss to the breeder.

The guarantee of a steady rate of purchase—say of 7000, 8000, or 9000—for the army, is, therefore, essential to the supply being forthcoming; and it is suggested that the existing establishments of horses had better be weeded occasionally, than the rate of purchase made to vary much. Such weeding would remove inefficient and sickly horses, and be in that respect economical.

It is further urged that the saddle-horse is necessarily an expensive animal to rear, because its dam does little work, it must have oats to eat, often meets with accidents, and these accidents depreciate its value; the successful colt must therefore be got up in such a form that it may fetch a price which shall cover the losses incurred in the case of failure. The price, therefore, cannot be low if it is to be moderately remunerative.

A plan for having "depôts for foals," which the State is to purchase when young, and then entrust to farmers to be reared at the expense of the State, is wisely rejected in the report in question.

It would seem, then, that the French Government, dissatisfied with its attempts at breeding, is disposed to trust for its supply of riding-horses to the general market, when encouraged by a regular demand and a fair price.

Assuming, then, that the remount is to be procured in the general market, the question remains—what is the agency to be employed in making purchases? We are told that "The employment of large contractors to furnish horses is a most vicious method, for how can any one foretell the value and the prospect of an abundant supply of horses? It is an undertaking which either ruins the contractor or makes his fortune; but as the purveyor always knows how to arrange matters so as not to lose in the transaction—for those charged to receive the horses will accept very middling or even bad animals rather than see an unfortunate speculator lose his fortune in the service of the State—the army is always more or less the sufferer; at all events, it is prefer-

able by direct purchases to allow the breeders to have a profit rather than these dealers."

The purchase by regiments is preferable, but each regiment ought only to buy horses from its own immediate neighbourhood. The mere presence at a distant fair of strangers bent on purchasing raises prices, and if the opportunity is not favorable a long journey will have been incurred to no good purpose.

The establishment, therefore, of permanent remount depôts in the most favoured and central districts is advocated, that the officers commissioned to purchase may be in contact with the breeders without any intervention of commissioners or dealers. It is contemplated that they would make purchases for each branch of the service indiscriminately within their district, although generally each province or department will have its peculiar stamp of horse, whether suited to the artillery or the cavalry.

These depôts would not only purchase, but handle and train the horses, before sorting and apportioning them among the different corps. It is expected that, in the breeding districts, the supply of forage will be cheap and ample, and that the young horse, during his course of training, will be least exposed to sickness in his native country.

It is considered more prudent to appoint a commission than to employ for purchase a single agent, who might bear a grudge against some particular breeder.

Purchases might be made at the principal fairs or at the breeders' homes, but a complaint is made that certain breeders are not so frank and are more given to imposition than the dealers.

Although the services of a contractor be not specially engaged, horses might sometimes be bought through dealers who have a ready access to secluded districts and farmers who follow the old routine of sale.

In every depôt there ought to be a register, in which a page should be assigned to each breeder in the district, wherein to notify the number of horses furnished by him, and the arm of the service for which they were intended.

With due provision and encouragement, it is considered that Normandy and Brittany alone might furnish 4000 or 5000 horses yearly—a large portion of the average supply required.

The French prices for 1851, 1852, and 1853, were as follows:

Price and Height of French Troop-horses.

Branches of the Service.	Height.	Official Price.	Mean Purchase-price in								
			1851.			1852.			1853.		
	Hands.	£	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Reserve	15·2 to 15·3	32	31	0	0	32	0	0	31	10	0
Cavalry of the Line	15 to 15·2	26	26	14	0	26	0	0	27	6	0
Light Cavalry	14·3 to 15	22	22	18	0	23	2	0	22	16	0
Cavalry in Africa	—	14	14	13	4	14	0	0	14	13	10
Manège (Riding-school and horses in training)	—	40	42	6	8	51	10	0	60	13	0
Officers' chargers	—	36	38	0	6	36	6	0	41	2	6
Ditto in Africa	—	20	20	15	6	26	0	0	20	10	0
Artillery:											
Riding	—	26		—		18	0	0	25	0	0
In Africa	—	—	12	12	0		—		12	13	0
Draught-horses	15 to 15·2	22	27	12	0		—		21	15	0
Mules	14·3 to 15·1	20		—			—		16	2	0
Donkeys	—	8		—			—			—	
Camels	—	8		—			—			—	

QUETELET ON THE ELECTRICITY OF THE AIR.

In his important work, 'Sur la Physique du Globe,' M. Quetelet gives a voluminous account of the electrical observations made under his superintendence at Brussels, and devotes one section to an explanation of the distribution of the electricity of the air, which cannot fail to interest our readers, and which we therefore present to them in a condensed form.

M. Quetelet remarks, that were it not for the existence of other bodies in celestial space, the terrestrial atmosphere would scarcely experience any electrical changes. He further tells us that the sun must be regarded as the chief exciting and disturbing cause. He regards our atmosphere as divided into two layers—the upper one "nearly immovable in all its parts, the lower one constantly traversed and stirred up by winds." The upper layer he considers is also divided into two portions—the one, negative, equilibrates the positive electricity of the sun and of the surrounding space;* and the other, positive, acts through

* M. Quetelet adds in a note, "If it is objected that the electricity of the sun traverses the void without resistance, and that its fluid ought to unite with the fluid of the opposite nature which we suppose to exist in the exterior layer of the atmosphere, we might without difficulty admit this hypo-

the lower stratum of air, and equilibrates the negative electricity of the earth. The positive and negative electricities of the upper regions of the atmosphere are kept apart by the extreme dryness which must prevail there. In the lower stratum absolute dryness does not exist. It is more or less moist, constantly disturbed, and traversed, although with considerable difficulty, by the positive electricity, which can at times unite with the opposite electricity of the earth; but these never exist in intimate connection. The action is like that of two conductors charged with opposite electricities and placed at a distance: "the opposite fluids tends to unite through the more or less moist air that is interposed, but their charges remain the same. If the losses are constantly renewed, the positive fluid of the upper layer gives rise to all the electrical phenomena that we observe upon our globe. Being partially retained by the dryness and relative immobility of the stratum in which it finds itself, it operates through the lower stratum, which is always agitated and always more or less humid, and partially paralyses the electricity indicated by our instruments on the surface of the globe."

In our northern hemisphere, the electricity is stronger in winter than in summer. The layer of the atmosphere that is constantly disturbed is not so thick at this season, and thus we are closer to the upper layer. In the course of a year, this augmentation of electricity and diminution of height becomes very apparent; between June and January, or December, the variation is as much as 1 to 10. Nor is the diurnal variation less noticeable; "the electricity becomes stronger towards the approach of night, and its minimum occurs a little after the hours of strongest heat during the day. It is towards three o'clock p.m. in the summer time that the electrified layer which acts upon our instruments appears to be furthest removed from the earth." It should also be remembered that as heat augments, and the air becomes drier, its conducting power is diminished. During the night the solar action is insensible, and the variation is much less, and that which occurs appears to be the result of changes in the opposite hemisphere.

thesis, and our explanation would be simplified. There would, in fact, remain only the positive electricity below the superior envelope of our atmosphere, which would paralyse on one side the negative electricity of the sun, and on the other would act through the inferior envelope and paralyse the negative electricity on the surface of the globe. We must then admit that the electricity of the sun and the earth are of the same kind.

M. Quetelet observes that we have no precise ideas of the *absolute force of electricity*, and that we do not know whether its intensity is greater in the north than in the south, although if the upper stratum of the air is not so high, the electricity must be stronger, as seems to be shown by the auroras. "The earth is generally regarded as solid throughout all its extent, although many physicists consider that it is only solid in its exterior portion. They say, and, as we think, with reason, that the interior portion, in a state of greater or less fluidity, may have its own movements, which may occasion magnetic variations, and also the electric variations that are intimately connected with them."

The great laws of the distribution of atmospheric electricity are often masked by secondary causes. Thus, especially during the summer, we notice the formation of strata of clouds carrying an electricity which M. Quetelet denominates *accidental*, and which gives rise to storms. "These clouds may be the origin of hail, which finds itself attracted and repelled by the upper stratum of the air, until it falls by force of gravity," or there may be a direct electrical action upon the earth in the shape of storms. Negative electricity is more frequent in the atmosphere during the summer, the space between the earth and the stationary portion of the atmosphere being then greater, and also being drier and better able to accommodate clouds which assume "a supplementary electricity." The tranquil passage of electricity towards the earth is more frequent in winter, but in the summer, by reason of the greater dryness, it is less continuous and more violent. Thunder storms are more common in summer than in winter, but those of the latter season are often extremely dangerous. One, for example, in the winter of 1860, struck twenty clock towers within the limits of Belgium, and in the course of a few hours; and in the night of April 14th, 1718, twenty-four towers were struck in France, along the coasts of Brittany. Summer storms are usually less destructive on the surface of the earth, and their action limited to a smaller space. Winter storms act over a wider range.

M. Quetelet gives numerous details of the great storm of the 19th February, 1860, to which allusion has just been made, and which surpassed in violence any ever known to have occurred in Belgium. It began on the evening of the Sunday in question, and followed the route usually taken by such scourges in that country. About seven o'clock it burst over Rolleghem and Courtroy; an hour afterwards it reached Ghent, Brussels, and the neighbourhood of Antwerp; and by nine it was at Liege, carrying devastation as it went, and

increasing in force. Hail, rain, and snow, fell at various places during its passage; several of the churches upon which the lightning fell were set on fire; the wind was tempestuous, and the thunder-peals extremely loud. The barometer was strongly depressed, and the thermometer experienced considerable oscillations. M. Duprez, commenting on this alarming visitation, states that fourteen out of twenty-two cases of buildings being struck resulted in fires, and that the only edifice which was provided with a lightning-conductor suffered no damage. M. Quetelet adds that in his statistics of buildings or vessels struck by lightning, he found that out of a hundred and sixty-eight cases in which lightning-conductors had been struck, only twenty-seven, by reason of grave defects in their formation, had failed to exercise a preservative power.

The average annual allowance of thunder-storms for Belgium is fifteen or sixteen, and they are twenty-one times more numerous in summer than in winter. The annual number for a particular locality will vary considerably, being four times as many in some years as in others, while fifteen or twenty leagues away the average has not been changed. In our northern countries winter storms, while the sun is below the equator, are usually formed between the clouds and the earth; those in summer, when the sun is above the equator, are formed in a higher region, between the clouds and the stationary layer of the atmosphere, and they have less tendency to strike elevated objects. Their region of action is often very limited, extending over only a few leagues. The velocity of the movement of thunder-storms equals that of the most rapid winds.

MEDICO-LEGAL CONTRIBUTIONS ON ARSENIC.

By Charles H. Porter, M.D., Professor of Chemistry and Medical Jurisprudence, Albany Medical College.

(*Continued from p.* 173.)

6. *Remarks on the Method to be pursued.*—It is not difficult to identify the various metallic poisons, when they are free from other substances, by the application of a few simple tests. Where, however, the poisons are in admixture with organic matter, the problem presented is of far more difficult solution, for the organic substances may prevent, modify, or conceal, the characteristic chemical reactions which otherwise would

take place upon the application of the different reagents. As most often the substances presented for toxical examination are articles of food or portions of the human system, toxicologists have devised many methods for the destruction or separation of the organic matter without any loss of poison. The method we prefer is proposed by Duflos (?) and elaborated by Fresenius and Babo. I speak from a somewhat large experience, and can say that, taking everything into consideration, it is far more reliable and satisfactory than any other that I have met with. In many cases forwarded to me for examination I have not been informed of the circumstances attending the death, and have therefore sought for a method by which (after determining as far as possible the absence of organic poisons) none of the metallic poisons could escape detection, and have adopted that alluded to.

If the problem were always the simple one, "Is arsenic or is mercury contained in these remains?" other processes might possibly be more advantageously employed. Taylor, in his work on poisons, speaks depreciatingly of Fresenius and Babo's method as being elaborate and exhaustive, and says that (according to Orfila) its complications surpass all credibility. To this it may be replied that the process which the most distinguished chemists of the world approve, as Otto, Bocher, Wöhler, Silliman, &c., and which stands the test of years, must have great merit in it, or it would not be thus supported; in their opinion it is evidently the best that has been devised.

It is true that the process demands a considerable amount of chemical knowledge and skill in manipulation; it is elaborate and exhaustive; it is also accurate and reliable, and can be satisfactorily applied in any case.

It may be said that in many cases a physician or other person, who has not applied himself especially to the detection of poisons, may satisfactorily determine their presence. Undoubtedly this is true; but it seems to us most prudent, in cases involving a human life, to have the examination conducted by those who are experts and have made toxicology a specialty, for thus the fallacies attending all chemical processes in the hands of the inexperienced are removed.

We will now briefly give a—

II. *General Method for the Destruction of Organic Matter in the Presence of the Metallic Poisons.*

Decolorisation and Solution.—If much water is present in

the matter to be examined, it is desirable to concentrate it in a water bath, or at a temperature not exceeding 212° F.; it is then to be treated as indicated below.

Solid matter, such as the liver, stomach, &c., after being finely divided, is to be placed in a porcelain evaporating-dish, and mixed with chlorhydric acid and water until it forms a thin paste. It is neither desirable nor necessary to use a very strong acid; an acid having the density of 1·11 is sufficient. The dish is then to be placed upon a water bath, or over a lamp, and gently heated at a temperature not exceeding 180° F. Chlorate of potash is then to be added, in portions of from ten to twenty grains, every five minutes or thereabouts, occasionally stirring the mixture until the whole is converted into a light yellow homogeneous liquid, when it is allowed to cool. (The fatty matters are with difficulty destroyed, nor is their decomposition generally absolutely necessary; they solidify upon cooling, and are easily removed.) The liquid is now to be placed upon the sand bath, and heated until the smell of chlorine has disappeared. By the action of the chlorhydric acid upon the chlorate of potash, chlorine compounds are evolved, which decompose the organic matter, and convert any arsenic that may be present into arsenic acid. After cooling, the liquid is to be filtered, and the filtrate carefully preserved; the residue remaining upon the filter is to be thoroughly washed, and the washings collected in a separate vessel; if in large quantity they may be evaporated to the bulk of three or four ounces, and are then to be added to the original liquid. (The residue may contain sulphate of lead.)

2. *Treatment by sulphydric acid* (H S).—The mixed fluid is poured into a beaker glass, and a slow stream of washed sulphydric acid passed through it for twelve hours; it is then to be allowed to remain at rest for the same length of time. This treatment precipitates any arsenic, mercury, antimony, copper, &c., that may be present in the form of the corresponding sulphide, together with a portion of organic matter. The liquid is afterwards filtered, and the precipitate washed until a small portion of the washings gives no precipitate with nitrate of silver, thus indicating the absence of chlorine. (The filtrate and washings may contain zinc, &c.)

The production of a precipitate by sulphydric acid does not of itself indicate that any metals were in solution, since organic matter, even if alone, is precipitated under these circumstances.

3. *Purification of the precipitate.*—It is to be particularly noted that in order to obtain satisfactory results, all the

materials used in the following operations must be free from chlorine, otherwise a portion or the whole of the arsenic, according to the quantity present, will be converted into the chloride and may be volatilized. If the precipitate by sulphydric acid be of a yellow colour, it may contain arsenic, antimony, or tin; if of a dark colour, approaching to blackness, it may contain copper, lead, bismuth, or mercury, together with the metals first named. It is now to be treated with ammonia and sulphide of ammonium, which will dissolve the sulphides of arsenic, antimony, and tin. The ammoniacal solution may be poured upon the filter (stirring the precipitate meanwhile with a feather or with a glass rod covered with caoutchouc) until all soluble matter is removed. The precipitate is then to be washed, and the first filtrate, mixed with the washings, is to be evaporated to dryness at a moderate temperature. The dry residue is to be treated with fuming nitric acid, and gently evaporated. This operation is to be repeated until the residue, while moist, is of a clear yellow colour. A few drops of water are to be added, and gradually a solution of carbonate of soda to neutralise the acid. A mixture of two parts of nitrate of soda and one part of carbonate of soda is then added, the whole is carefully mixed together and dried, then placed in a porcelain crucible, and gradually heated to fusion. By this operation all organic matter has been destroyed, and the metals present oxidized; the antimony is converted into antimoniate of soda, the tin into binoxide of tin, and the arsenic into arseniate of soda; the latter only is soluble in cold water. The fused mass, when cold, is therefore treated with cold water, and the solution placed in a porcelain dish; sulphuric acid is then added until the liquid is strongly acid. This expels any nitric and nitrous acids that may be present; it is then evaporated, and, when quite concentrated, more sulphuric acid is added. If no red fumes appear upon the last addition, it has been added in sufficient quantity; if they are produced, the operation must be repeated. The solution, finally, must be evaporated until the white fumes of sulphuric acid are given off. Any arsenic present is now in solution as arsenic acid. It is desirable, in order to determine the weight of arsenic present, to convert it into arsenious acid; this is readily done by adding concentrated sulphurous acid solution until its odour is distinctly perceptible, then evaporating the liquid until its odour disappears.

III. *Method for determining the Weight of Arsenic, and making the Characteristic Tests.*

1. *Determination of the weight of Arsenic.*—The solution obtained as just directed is to be diluted with water, placed in a beaker, together with the washings of the porcelain dish, and a stream of washed sulphydric acid passed into it. If any arsenic is present, it will be precipitated in the form of tersulphide of arsenic.

This is to be collected on a small filter (previously dried at 212° F. and weighed), then thoroughly washed, and dried at the same temperature as before, and again weighed. The increase in the weight of the filter represents the amount of tersulphide of arsenic present.

Or the precipitate may be collected on a small filter thoroughly washed, then dilute ammonia added drop by drop, until it is all dissolved; the filtrate and the washings are to be collected in a weighed dish, and evaporated to dryness and weighed as above.

Each part of persulphide of arsenic is equal to 0·8049 of arsenious acid, or to 0·6098 of metallic arsenic.

Thus, supposing the weight of the sulphide of arsenic was 0·345 grains, this is equal to (0·345 × 0·8049) = 0·277 grains arsenious acid, or to (0·305 × 6098) = 0·210 grains metallic arsenic.

2. *Conversion of the Sulphide of Arsenic into compounds suitable for testing.*—It is now desirable to make the most characteristic tests for arsenic; some of them are popularly known, and it is expected by courts of justice that they shall be made when arsenic is found in the examination of a case of suspected poisoning; there are others less known, but at least equally distinctive. Now, although it is not necessary to make them all to satisfy a chemist of the presence of arsenic, yet, as in the majority of cases, there is a sufficient quantity present to make all those tests which are deemed satisfactory by medical jurists, and as it consumes but little time, is it not as well to make all, or at least the greater part of them? Any common test omitted is often seized by the defendant's counsel, and is made to appear as the most characteristic, if not the only reliable test. Why not avoid even this slight perplexity? Besides, otherwise the jury may be misled. Again, an accumulation of tests perfectly corresponding with and corroborating each other, is more satisfactory to them.

In fact, the production of a metallic mirror, easily vola-

tilized and readily oxidizable, and which furnishes, by oxidation, octahedral crystals soluble in water, is sufficient evidence of arsenic.

Various plans may be adopted to bring the sulphide of arsenic, obtained in the manner just mentioned, into a state fit for making the various tests.

The following method is convenient and simple:—A part, or the whole, of the sulphide of arsenic, according to the quantity obtained, is to be placed in a small porcelain dish, and concentrated nitric acid added and evaporated. This operation is to be repeated a number of times. The residue is to be repeatedly moistened with water, and as often evaporated; by this means every trace of nitric acid is finally removed (a condition essential to the success of the succeeding operations); the sulphide of arsenic is by this treatment converted into arsenic acid. The mass remaining in the dish is dissolved in a small quantity of water, and, if particles of sulphur are present, it is to be filtered, the filter thoroughly washed, and the washings mixed with the original solution. The mixed fluid may be divided into two parts, *A* and *B*.

A is to be divided into two parts, which may be used respectively in (1) Marsh's apparatus, and (2) according to Reinsch's method.

B is to be evaporated nearly to dryness, then thoroughly mixed with twice its bulk of carbonate of soda, and gently heated until perfectly dry. It may then be divided into two parts, to be used respectively in (1) Fresenius' and Babo's apparatus, and (2) in the ordinary reduction tubes.

3. *Marsh's apparatus.*—Mr. Marsh, of Woolwich, in the year 1836, proposed an exceedingly simple and delicate method for the detection of arsenic. The principle upon which it is founded may be briefly stated as follows:—

In the presence of nascent hydrogen, arsenious and arsenic acids are deoxidized, water is formed, and the metallic arsenic combines with hydrogen, forming arseniuretted hydrogen gas ($AsO_3 + 6H, = AsH_3 + 3HO$). The simplest form of Marsh's apparatus consists of a bottle closed with a cork containing two perforations, in which are placed a funnel tube and a tube bent at right angles, drawn out to a point at the free end,—zinc and water being placed in the bottle, and a little sulphuric acid added, hydrogen will be evolved; if now a solution of arsenious or arsenic acid be added, arseniuretted hydrogen will be formed. This gas is inflammable, burning with a bluish-white flame. If a cold porcelain plate be held in the flame, a brownish stain of

metallic arsenic will be formed upon the porcelain. Berzelius observed that if the tube was heated, the gas was decomposed, and that metallic arsenic was deposited upon its walls. Pfaff and Thompson made, independently of each other, the discovery that antimony formed a similar compound with hydrogen, and that it exhibited phenomena similar to those already noticed in the case of arseniuretted hydrogen. This last discovery destroyed confidence in Marsh's test, until it was found that the two compounds could readily be distinguished.

Marsh's apparatus, as originally proposed, was open to numerous objections; improvements have been made, however, by which these have been very completely removed. The apparatus here described I have used with much advantage, although somewhat more complicated than the form usually employed; it fulfils its objects so perfectly, that the trouble of making it is amply compensated for by its efficiency.

The generating vessel is a Wolfe's bottle; its three necks are closed by corks, in which are accurately fitted a funnel-tube, a syphon-tube,—for drawing off the liquid when in large quantity, without admitting air and long suspending the operation,—and a bulbed tube filled with fragments of pumice-stone or charcoal moistened with sulphuric acid. A tube bent thrice at right angles connects the drying bulb with the drying tube; this has in its lower part, immediately above the constriction, a little asbestos or cotton to prevent the mass above from falling down. The lower half of the tube is to be filled with caustic potash, in fragments the size of a pea; the upper half is nearly filled with fragments of chloride of calcium; finally, a little asbestos or cotton is placed above.

The caustic potash serves two purposes,—that of drying the gas and removing any acid that may be present, which otherwise might prevent the formation of arsenical spots. Thus, if sulphuric acid were carried over, it would liberate chlorhydric acid from the chloride of calcium; and again, if a chlorhydric solution were to be used in the apparatus (which is not to be recommended), the effect above mentioned might occur; the potash removes all danger of this happening. The chloride of calcium serves simply to dry the gas. The mouth of the drying tube is closed with a cork, through which passes a short tube bent at right angles. The reduction tube ought to be of Bohemian glass,—this will not readily fuse, and, being free from lead, will not blacken when heated; it is connected with the mouth of the drying tube by a small bit

of rubber tubing. A convenient sized tube is one of about three sixteenths of an inch external diameter, and about two thirds of this diameter within. It is advisable to draw out the tube at points from two to two and a half inches asunder, and also at the end of a jet; for a small deposit produced in a constriction may be more distinctly seen than if in another part of the tube. A number of these tubes, thoroughly cleansed, and from twelve to eighteen inches in length, ought to be previously prepared. The tube may be heated by an ordinary alcohol lamp, more conveniently by a Bunsen's gas-burner, enclosed by a sheet-iron case (supported by a perforated cork moving on the stem of the burner), thus preventing the flame flickering by currents of air.

It is not necessary to give in detail the proper mode of using the apparatus; suffice it to say that zinc and water being placed within the generator, diluted sulphuric acid (one of acid to three of water), previously cooled, is to be added. When the air is driven out the tube may be heated; if, after the lapse of an hour or two, no stain is produced in the tube, the supposed arsenical liquid may be introduced and tested. It is advisable to obtain mirrors at different parts of a number of tubes, and spots upon a number of pieces of porcelain, such as crucible covers; if the arsenic is present in but minute quantity, no spots can be obtained on the porcelain. (See Flandin's method of procedure, 'Traité de Poisons,' t. i, p. 621.) The delicacy of Marsh's test is very great; thus Storter shows that the $\frac{1}{3000}$th of a grain of arsenious acid in more than ten million times its weight of water will give a distinct stain in the reduction tube. (*Am. Acad. Arts and Sciences, Proc.* vol. viii, p. 79.)

We may notice briefly some of the more simple modes of distinguishing between the mirrors and spots produced by arsenic and antimony.

1. *Treatment of the mirrors in the reduction tube.—a.* The arsenical mirrors are always produced beyond the heated part, while antimoniuretted hydrogen, being more easily decomposed by heat than is arseniuretted hydrogen, produces a mirror before as well as beyond the heated part.

b. Arsenic mirrors are of a lustrous, blackish-brown colour, and when thin are semi-transparent. Antimony mirrors are fused into small, silver-white globules, near the heated part of the tube; beyond, they are dull and almost black.

c. If a very slow stream of dry sulphydric acid is passed into the tube, and the mirror is gently heated, it will, if

arsenic, be converted into the yellow sulphide of arsenic, and if antimony, into the orange or black sulphide of antimony.

d. If dry chlorhydric acid gas be passed into the tube (treated as above), when cold the deposit, if of sulphide of arsenic, remains unchanged, if of sulphide of antimony it is converted into chloride of antimony, and is volatilized. (The spot, if unchanged, may be dissolved in ammonia, and further experimented with.)

2. *Treatment of the spots on porcelain.—a.* Arsenic spots when moistened with a solution of hypochlorite of soda immediately disappear. Antimony spots are not affected, at least, not until after a long time.

b. An arsenic spot treated with a drop of yellow sulphide of ammonium dissolves slowly and imperfectly; an antimony spot rapidly disappears. If, after this treatment, they are allowed to dry, the antimony spot assumes a rich orange tint, the arsenic spot a light lemon colour on the borders, with a larger or smaller mass of undissolved metal in the centre.

It may be remarked, that not unfrequently solutions containing organic matter are introduced into Marsh's apparatus. This is extremely improper, for organic matter alone occasionally produces mirrors similar to those obtained by arsenic and antimony, and if these metals are present the indications are neither so clear nor so satisfactory as when pure solutions are used.

4. *Reinsch's test.*—Hugo Reinsch published in 1843 (*Ann. d'Hygeine*, 1843, vol. i, p. 439) a simple method of detecting arsenic. It may be stated as follows:—The suspected mass, if not liquid, is to be finely divided, placed in a porcelain dish with water, and chlorhydric acid added until distinctly acid. The mixture is then to be boiled until it becomes, as far as possible, homogeneous. It is then to be strained or filtered, and boiled again with strips of bright copper foil or gauze. Arsenic, if present, is deposited upon the copper, which becomes blackened. The metallic slips are then carefully washed, dried, and heated in a glass tube closed at one end, when arsenious acid sublimes, which may be recognised by its solubility in water and by the liquid tests noted hereafter. (The liquid prepared from the suspected organic matter, in the manner previously mentioned, is admirably fitted for this purpose.) Lippart has shown (*Journ. für Prak. Chem.*, lxxxi, p. 16) that the deposit is not pure arsenic, as was generally supposed, but a combination of arsenic and

copper (Cu 68, As 32 per cent.), and that by continued heating of this deposit in hydrogen gas it loses only 7 per cent. of arsenic, and that then if ignited in air the greater part of the arsenic remains.

Reinsch's test is readily made. It is not, however, so delicate as Marsh's test. There are a number of objections to it, the most important of which are the following:

1. If the arsenic is in minute quantity, the deposit on copper will not produce arsenious acid in sufficient quantity to make the confirmatory tests.

2. If sulphide of arsenic is present it escapes detection altogether. In this state arsenic often exists in the remains of those poisoned by it who have been dead a considerable time. Arsenic is often contained in the commercial copper, and hence, under certain circumstances, as when free chlorine is present in the liquid examined, a deposit of arsenic would be produced, even if the liquid did not contain it originally.

5. *Fresenius' and Babo's apparatus.*—Arsenious and arsenic acids, and their corresponding earthy and alkaline salts, when ignited with a mixture of cyanide of potassium and carbonate of soda, yield up all their arsenic in the metallic state. If the tersulphide of arsenic be employed, the greater part of the metal is reduced; the remainder forms a sulpho-salt unacted upon by cyanide of potassium. If an excess of sulphur is present the metal remains in great part or wholly unreduced. If the ignition is made in a sealed glass tube, sealed at one end, a part of the arsenic may be oxidized by the air, and thus, if it be present in small quantity, it may escape detection. To avoid this result, Fresenius and Babo recommend an apparatus in which the reduction takes place in an atmosphere of carbonic acid.

The flask for the evolution of carbonic acid is partially filled with lumps of marble or compact limestone. It is closed by a cork, containing two perforations, into one of which is fitted the funnel tube, into the other perforation is a tube connecting the two flasks. The second flask contains concentrated sulphuric acid, which dries the gas as it passes through it. The mode of using the apparatus is as follows:—The sulphide of arsenic, or preferably the arsenate of soda, prepared from the suspected matter as already mentioned, is pulverised in a warm mortar with ten parts of a well-dried mixture, consisting of three parts of carbonate of soda and one part of cyanide of potassium. The powdered mass is then placed on a slip of glazed card paper, bent into the

shape of a gutter, and pushed into the reduction tube to its centre. By turning the card the mixture is deposited without soiling other parts of the tube. The card is then withdrawn and the tube connected with the apparatus, supporting its free end if necessary. The tube ought to be of Bohemian glass, and about one fourth of an inch external diameter. Chlorhydric acid is now added to the flask containing the marble; the carbonic acid evolved is dried in the other flask. The reduction tube must now be gently heated throughout its whole length until all moisture is expelled, both from its walls and from the mixture. When this is accomplished, and when (the air having been completely driven out) the bubbles of carbonic acid gas pass through at the rate of one a second, a lighted lamp may be placed in front of the mixture, and the mixture heated by another lamp flame. The greater part of the arsenic will condense near the drawn-out end of the tube; a small portion will escape from the tube, producing a garlic odour in the atmosphere. By carefully heating the tube before and behind the deposit it may be collected in a small spot, and will have a highly lustrous metallic appearance. If it is to be preserved, the point may be sealed by the blow-pipe flame, the other extremity drawn out and sealed in a similar manner. The deposit may, of course, be converted into arsenious acid by oxidation, dissolved in water, and the liquid tests applied.

The advantages of Fresenius' and Babo's test are these:

1. It is simple and easy of execution.

2. It is impossible to confound arsenic with antimony. Antimony compounds do not furnish any deposit under these circumstances.

3. It is a delicate test; the $\frac{1}{300}$th part of a grain may be detected by careful manipulation. It is not, however, nearly so delicate nor so readily applied as Marsh's test.

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Annales Vétérinaire, Bruxelles, December, 1862.

DISEASES ARISING FROM A MORBID FERMENT, AND OF THE USE OF SULPHATES IN MEDICINE.

By Dr. Govanni Palli, of Milan, and Dr. Janssens, of Brussels Presse Med.-Belge.

This long and interesting memoir is summed up in the following conclusions by M. Janssens:—1st. A great many maladies have for their cause a fermentation of the principles of the blood, determined sometimes by putrescent matter in the blood, at others by ferments from without; or by spontaneous alteration of the elements of the blood itself through some peculiar influences to which the system has been subjected. 2nd. The means to prevent these organic fermentations, or neutralize their effects, have not been successfully applied in therapeutics, because, to be effectual, they ought to modify the morbid state of the blood to the extent that life must necessarily be preserved. 3rd. Sulphureous acid has the property of preventing or arresting the fermentation in animal and vegetable matter; even in those instances where arsenious and hydrocyanic acids have had no effect in arresting it; as, for example, the synaptasic and the saligenic fermentation. Besides this great activity, its effects are neither decomposing nor toxic. 4th. The antifermentative qualities are well preserved in the alkaline and earthy sulphites, the same as its decolorating properties on organic matter. They prevent fermentation without destroying the ferment, in the same manner as they alter the colours without destroying them. 5th. The sulphites are perfectly tolerated in the system, not only by animals, but also by man, and that in considerably large doses—eight to ten grammes *per diem*, and even more, and might be given and continued for a long time; that is to say, in sufficient quantity to prevent or arrest morbid fermentation without poisoning the animal economy. They are endowed with an antifermentative power more energetic, or at least more extensive, than the antiseptic poisons, without being toxic like the latter. 6th. In those animals to whom a certain quantity of the sulphites has been administered, and which are afterwards sacrificed, it is found that the urine, the

blood, the viscera, and the muscles, resist cadaveric putrefaction much longer than animals killed under the same circumstances, but without having been under the influence of the action of the sulphites. 7th. Animals to which a certain quantity of the sulphites have been given, resist the morbid action of pus, putrefied blood, or the matter of glanders injected into the veins, in doses to which other animals, under the same condition, would have contracted a grave malady, or perhaps died, in consequence. 8th. Animals into whose veins has been injected putrid matter, pus, or corrupted blood, and in whose veins has been injected at the same time, or immediately after, a solution of alkaline sulphite, resist the infection or recover in a few days, while in others identically the same, but without being sulphited, typhoid fever or death is produced. 9th. An animal which has supported the injection of putrid matter without being gravely incommoded, or has recovered from its effects, in a few days through the action of the sulphites, contract a grave malady or dies if again submitted to the same experiment without being sulphited. 10th. In those animals which have been inoculated with the mucus of glanders, and treated by the sulphites, either previously or immediately after, it is true that the wound soon shows the characteristic signs of the malady, but the wound heals by degrees and cicatrizes, while the same inoculation performed on other animals, and identically under the same condition, a great swelling is produced, which causes death within a few hours, or else a general infection, with a multiplicity of abscesses, which ordinarily terminate in a few days in death, or later in general marasmus. 11th. The pus, or corrupted blood, or contagious ferment (as, for instance, those of glanders), might be neutralized in their effects on the living organism, and, in consequence, we can regulate and arrest the morbid action without the means employed being incompatible with life. 12th. The maladies in which the prophylactic or curative effects of the sulphites has been already ascertained, are those in which a pathological ferment acts in some manner or other, like in exanthema, scrofulous affections, rheumatic fever, intermittent fever, or typhoid fevers (milliary and petechial, &c.), fevers induced by putrid reabsorption (puerperal fevers, &c.), epidemic and contagious fevers. 13th. The perfect harmlessness of the remedy admits of the administration of it as a prophylactic in many circumstances, and in these cases the success of it will always be more complete than in the treatment of a malady already fully developed; in fact its effects are limited to the neutralizing of the morbid fermentation, and not to the restoring or removing of the altera-

tions in the tissues which are the results of those fermentations already accomplished. 14th. The harmlessness of the sulphites permits their administration in considerable large doses without producing the slightest functional disturbance in the viscera; and also to administer them in virtue of their specific action on the ferments as a means of exploration in grave or suspicious cases. 15th. Whenever in the course of a regular inflammatory affection the ataxia of the symptoms sets in, then the treatment by the sulphites is indicated; it simplifies the malady, and rids it of its fermentative complications, which the efficacy of the remedy enables us to appreciate more accurately. 16th. The reductive or disoxidative power of the sulphites, and of the hyposulphites in the organic system, by virtue of which they change the secretions into a state of superior oxidation, must not be lost sight of. Their antiphlogistic effects ought to encourage the medical practitioner to employ them in catalytic affections even in the presence of some irritation or an inflammation; but this ought also to embolden us to have recourse to them as remedies endowed with great efficacy in genuine inflammatory affections. 17th. The redness, the dryness, the excoriations of the tongue, and even the fibrinous oxydation, and the fuliginous coating on the gums, do not counter-indicate the use of the sulphites, for these symptoms disappear in proportion as the remedy arrests the morbid fermentations of which they are the consequence. 18th. The sulphite of magnesia in the solid state is preferable to any of the others for internal administration, as it has no odour, very little taste, and is not liable to change by exposure to the air, and, notwithstanding these properties, contains, as compared with the other sulphites, a greater proportion of sulphureous acid. 19th. The sulphite of soda, which effervesces on exposure to the atmosphere, and has a strong, disagreeable, sulphureous taste, and is very soluble, is better adapted for injection or external application. 20th. The sulphite of potash has an unpleasant taste, and soon alters when exposed to the air, even when in a solid state, and the sulphite of ammonia, which has a still more disagreeable taste, added to a great alterability on exposure, does not suit internal administration, but is very useful for external application in solution; particularly in cases of wounds which have an unhealthy appearance. 21st. The hyposulphite of soda may in many cases be substituted for the sulphite of magnesia; its taste is tolerable, and it has a solubility which recommends it; its antifermentative virtue is, however, inferior to that of the sulphite; at all events, it is much slower in action, as it only becomes effective after being converted into sulphite. Its best indication is as a prophylactic; in fact, it contains double the

quantity of sulphur to the sulphite, and through the respiration can generate successively a large quantity of sulphite in the system. 22nd. The hyposulphite of lime has also a very supportable taste, and does not undergo alterations on exposure to the air.

Its special and peculiar indication would be in tuberculous phthisis in the third stage, either to protect the organism against the absorption of purulent pus, or to favour the cicatrization and the occlusion of the calcareous caverns in the lungs. 23rd. The sulphites, when administered internally, are found in the urine in the state of sulphate, and partly in the state of undecomposed sulphite; and the hyposulphites in the state of sulphate, sulphite, and undecomposed hyposulphite, even in the short space of twelve hours after their administration. Their therapeutic action on the organism does not depend on the separation of the sulphuric acid in its free state; all their antifermentative power is exercised when in the state of salts, and the medical practitioner ought even to guard against the separation of their acids in the intestines, by recommending the patient to abstain from lemonade, orangeade, preserved fruit, such as tamarinds, &c., as it is well understood that the citric, tartaric, malic, and oxalic acids decompose the sulphites and the hyposulphites.

The result from the *ensemble* of this memoir is, that the doctrine of morbid ferments has played an important part in the medical theories of the last century, and that modern science has known how to appropriate it by despoiling it of its evident exagerations, based on rational suppositions of indisputable merit.

The numerous experiments made by M. Palli on animals, have already given confirmation to the ingenious ideas of this learned chemist. It is now for clinical experiments, made on a large scale, divested of all preconceived ideas to pronounce its ultimatum on the value of the doctrine of the cotalytic maladies, and on the therapeutic efficacy of the sulphites.

Already this medicament is the object of clinical experiments in Belgium, as well as in Italy and England.

We will carefully collect the results that we expect from fresh experiments, which will be the subject of a second memoir, and in which it is hoped we shall have an accumulation of facts sufficient to enable the reader to attain to a perfect knowledge of the subject, and to appreciate the doctrine of which we have constituted ourselves the impartial interpreters.

[At page 596, of vol. xxxv of the *Veterinarian*, will be found an article on the above interesting subject.]

Veterinary Jurisprudence.

PLYMOUTH GUILDHALL.—Monday.

Before the Mayor (W. Derry, Esq.), Admiral Basden, G. Mennie, R. Hicks, and J. Skardon, Esqrs.

Before commencing the business of the day, the Mayor called the attention of the sanitary inspector (Mr. Rowley) to the impure state of the water in the horse-trough at the Parade, and Mr. Rowley promised to give his attention to the subject.

EXPOSING UNWHOLESOME MEAT FOR SALE.

Mr. Rowley applied for an order to destroy some meat belonging to Mr. Lane, butcher. The inspector stated that on Saturday night he went to a stall in Plymouth market to search for some unwholesome meat which he expected to find; but, not finding it, he repaired to a shop in Cornwall Street, and there, behind a shutter, he found a quantity of veal in a very polluted condition. Yesterday witness called upon Lane, whose property he suspected the meat to be, but Lane totally denied it. Mr. Soper, another butcher in the market, had, it appeared, ordered Lane away when he began cutting up the meat in question.

Mr. Raddall, veterinary surgeon, deposed that the calf had not been born alive, and that the veal was unfit even for dogs to eat.

In reply to the Bench, Lane said that he was employed at the Cattle Market, got the veal from a slaughter-house, and took it to the market with the intention of destroying it.

The meat was eventually ordered to be destroyed, and the Bench said the case would be laid before the Sanitary Committee with a view to the summoning of Lane to answer the offence.

[We readily give a place to the 'Reports' of the sale of diseased meat, as in them we have a public recognition of the scientific knowledge of the members of our profession. In our present number will be found some criticisms on the opinion of a veterinary surgeon in a similar case, from the pen of Dr. Renton, to which we invite attention.]

ARMY APPOINTMENTS.

War Office, Pall Mall; *May* 29, 1863.

Acting-Veterinary Surgeon Daniel Maclean, to be Veterinary Surgeon, *vice* John Surtees Stockley, placed on half-pay.

MISCELLANEA.

SUPERSTITION IN THE NINETEENTH CENTURY.

A CERTAIN farmer residing at the western side of the parish of Drewsteignton, Devon, has lately had the misfortune to lose, by old age, two of his horses. He and his workman William, being more superstitious than wise, attributed the deaths to witchcraft. They consulted with their intelligent neighbours on the matter, and all agreed that some fiendish witch had caused the animals' death. The demise of Tuckett and Thomas, late white-witches, was bewailed, but there was one left at Crediton whose fame had reached the ear of the farmer, and he instantly saddled his nag and speedily reached the abode of Professor S., where the old incantations were put in practice. The professor quickly showed the unfortunate farmer the features of his bewitching enemy. Twenty-five shillings was paid for that and for the advice given to break the infernal spell. The farmer, overjoyed, retraced his steps, and within the space of an hour and a half was seen in the act of exhuming the dead bodies of his bewitched horses; the heart of each animal was taken out, was stuck all over with pins and blackthorns, and was then enclosed in brown paper. When night arrived, both hearts were consigned to a tremendous fire made from green ashen wood, and to augment the heat, one cwt. of coal was used for fuel. The hearts were consumed, and "the spell was broken."

To the above we may be permitted to add an incident that recently occurred to ourselves. We had not been long domiciled in our new habitation, when a person living in the neighbourhood called for the purpose of selling some garden produce. As he rented an adjoining field we objected to a pigsty of his, the propinquity of which might not be very agreeable. "Oh Sir!" he said, "the pigs be all dead: they were bewitched!" "Nonsense, man," we replied. "They have," he reiterated: "and not only they, but the 'taties' too; there be plenty of haulm but not a 'tatee' at the root." "How do you know they have been bewitched?" we asked. "I went to a wise man," he replied, "and he showed me the 'Effigy' of a person living up there"—pointing with his thumb to a house near,—"who had bewitched them." "And do you really believe it?" we exclaimed. "Yes," was the answer. "But who gave to the person referred to, the wisdom you talk about, do you think?" "Aye! now you ask, that I can. You know that not

long since a wise man died near here, and in his possession were found the books and other things that he used in his dealings with"—after a long pause, and with a significant look—" the devil." This was so absurd that a hearty laugh closed the colloquy, with a hope expressed that before this the people in the west had become wiser than to believe such nonsense.

Can such things be in this our day and not excite our pity and regret? Perhaps we are not surprised at reading that Bishop Jewel, in a sermon preached before Queen Elizabeth, in 1558, tells her, "It may please your Grace to understand that witches and sorcerers, within the four last years, are mavellously increased within your Grace's realm. Your subjects pine away even to death—their colour fadeth, their speech is benumbed, their senses are bereft; I pray God they never practise farther than upon the subject." John Bell, minister of the Gospel at Glaidsmuir, says "Providently two tests appeared to discover the crime: if the witch cries out, 'Lord have mercy upon me!' when apprehended; and the inability of shedding tears: because as a witch could only shed three tears, and those with her left eye, her stock was quickly exhausted; and that was the more striking, as King James First shrewdly observes, 'since other women in general are like the crocodile, ready to weep upon every slight occasion.'"

OBITUARY.

Death of Professor Renault.

We deeply regret to have to announce the death of Professor Renault, which sad intelligence we find recorded in the *Clinique,* which has just been received. It appears that he was sent on a mission to Italy, where the cattle plague—*Rinder pest*—now prevails; and that, from exposure to the pernicious influence of the districts which he was compelled to visit, while engaged in his arduous duties, he contracted the malady which carried him off. We join our most sincere regrets to those of M. Leblanc, the talented editor of the *Clinique,* and also to those of the members of the *Imperial Central Society of Veterinary Medicine,* which were manifested at the meeting of the 28th of May, when the president after having announced the mournful intelligence and expressed his conviction of the great loss science had sustained, adjourned the meeting as a tribute to the memory of the deceased professor.

THE

VETERINARIAN.

VOL. XXXVI. No. 428. AUGUST, 1863. Fourth Series. No. 104.

Communications and Cases.

ON SOME OF THE DISEASES OF THE RESPIRATORY ORGANS OF THE HORSE AND OTHER ANIMALS.

By Professor Brown, M.R.C.V.S., London.

(*Continued from p.* 235).

Catarrhal affections.

Taking the entire list of diseases of the mucous membrane of the air-passage, the larger portion will be included under the term "catarrhal." From the common cold, with its various stages, to the well-known though, little comprehended, influenza, the general characters are sufficiently common to permit a classification under this head; always providing we are allowed to free ourselves from all restraints when pursuing our inquiries after once starting in the orthodox way.

Considering the very commonplace nature of the process "taking or catching a cold," there has been a great deal of discussion at different times upon the exact method by which the result is achieved; and the rival influences of cold and heat have at one time and another had their due share of importance accorded to them; but the observer of some years past must have noticed the unaccountable prevalence of "colds" of the most decided description, irrespective of atmospheric change to any extent. The weather may be cool or hot, or wet or dry; there can be discovered no advantage in the one or other as far as the disease is concerned, save that a change of any kind commonly is followed by an

improvement. So often has this point been noticed that it is almost impossible to escape the conclusion, that causes altogether independent of atmospheric temperature are at work to occasion the derangements in the system which we are all so familiar with in ourselves as well as in our animals.

The frequency of the occurrence robs the malady of half the interest it would otherwise excite; its symptoms, though common, are not trifling; nor would the functional and organic changes be lightly estimated if they were not so constantly under our observation. Let us for a moment examine the phenomena of a cold as we can recollect them to have presented themselves, probably on many occasions. A slight sensation of chilliness is probably the first indication; and here at the outset we have matter for reflection. The ordinary equable temperature of the body, preserved in a wonderful way through the medium of the nutritive, respiratory, and circulatory functions, is suddenly disturbed by a transient shiver, not consequent upon contact with a cold medium, but under external circumstances that afford no clue to the change. It will not suffice to say that diversion of the current of blood from the surface occasions a diminution of animal heat, as this condition is most likely not present; indeed the sudden chill of which we speak is more often associated with a very perceptible increase of surface heat. The susceptibility of the nervous system will be next adduced in explanation; a sudden impression is transmitted, say from the extremities of the sensient nerve to the spinal centres. Very satisfactory and lucid this! Here, in the present advanced state of physiology and pathology, we have a simple fact of common occurrence. A sudden impression of cold literally flashes along the spinal cord, without anything being present in the surrounding circumstances to account for it; the development of animal heat is for a brief space interrupted; the force of the organism secures a momentary shock; and, honestly speaking, we cannot offer an intelligible and simple explanation; meanwhile we are involving ourselves in the complicated mazes of pathological inquiry, while the shortest and straightest roads are yet unfamiliar to us.

To continue our analysis. The sensation of chilliness may continue, or it may not; the patient may suffer from a feeling of cold while his friends complain with equal bitterness of the heat; symptoms of fever are at the same time evident in dry, hot skin, irritable pulse, and injected membranes; thirst is constant, the secretions are diminished, and a sense of languor pervades the frame. We ask the pathologist to

pause a little over the consideration of these phenomena, and to endeavour to trace them to their source; if it will assist him, he is at liberty to suppose that the patient has previously been exposed to a draught, or has got his feet wet, or has been subjected to a sudden change of temperature: can he satisfy his mind upon the question? How does the contact of cold air upon a part of the body, or the presence of moisture, or change from a hot room to the cool air without, or the reverse, occasion all these functional derangements? We can understand that these causes may lead to local changes in the circulation and nervous functions of the parts immediately implicated, the skin and mucous membranes, and even the internal organs; but to connect them with the indications we have adduced is quite beyond our power, and the difficulty is largely increased when the symptoms occur without the presence of any of the quoted causes.

During the present time, and for some days past, the temperature of the air has been uniformly hot; no variation has been observed, and yet under these seemingly favorable circumstances catarrh or influenza has been remarkably prevalent in man and animals, attacking in many instances those who seem proof against ordinary causes, as they are presumed to be.

The result of a candid inquiry into the circumstances affecting the prevalence of catarrhal affections will be, we are satisfied, to establish a conviction that the received notions relative to the causation of these diseases are unsatisfactory, and indeed in the majority of cases untenable; that something beyond, and possibly independent of the temperature of the air, must be assumed in order to explain the disturbance of the system; and lastly, that there is every reason to conclude the existence of some subtile material that has hitherto escaped observation, of the nature of "miasm," which being taken into the system, occasions certain molecular changes that are expressed by certain symptoms of an intensity proportioned to the quantity of the poison absorbed or the susceptibility of the system to its influence. It will be seen that this statement brings us again to our primary position—the vagueness and uncertainty of our knowledge upon the subject of so simple a pathological problem as a common cold.

Fever to some extent attends the progress of the catarrhal affection invariably; sometimes the indications are exceedingly slight, at others very decided, and not unfrequently a critical evacuation is perceived from the respiratory or digestive membrane, in the shape of profuse mucous discharge or

spontaneous diarrhœa. The occurrence of febrile symptoms tends much to strengthen the conviction that some cause of irritation exists in the blood, the more particularly as no excitement sufficient to account for them can be detected in any part of the organism; doubtless fever is present in cases of positive local disease, but the explanation in such instances is easy; the extension of the excitement through the sympathetic system is sufficient to account for all the symptoms observed; in the case of catarrhal disease, however, this is not so, as fever is developed early in the attack, and is often the prominent symptom throughout.

Influenza or epidemic catarrh generally affords us very marked illustrations of sympathetic fever disproportioned to the local irritation, although in many cases a primary derangement of liver will in a great measure explain the morbid state of blood, that results in the phase of the disease not inaptly called "bilious fever."

Under whatever form catarrhal affections present themselves, the pathologist who examines minutely and analyses critically will not rest contented with the prevailing impressions upon the subject; there will be much that he may fail to comprehend, but sufficient will be apparent to convince him that no mere local excitement from change of temperature can account for the very complicated phenomena presented.

The treatment of catarrhal maladies seems in all cases to be based upon the assumption that something is to be got rid of, while at the same time the system is to be protected; thus all popular remedies applied to ourselves refer to purgatives, diuretics, or, most prominently of all, sudorifics; violent excitation of the excretory functions of the skin seems at once the most favourite and the most successful of all remedies.

In veterinary practice our object is also to eliminate by the medium of the skin, the kidneys, and the intestines; accordingly salines, such as the sulphate of magnesia, nitrate of potass, and potassio-tartrate of antimony, are useful medicaments; warm clothing, friction to the skin, soft diet, and moderate exercise, appear also to be conducive to a cure.

A successful termination may be confidently prognosticated in the majority of instances, but certain states of system occasionally complicate the case, and even lead to fatal results; some of these we propose to consider in the next paper.

(*To be continued.*)

OBSERVATIONS ON "SOUNDNESS."

By R. H. Dyer, M.R.C.V.S., Waterford.

(*Continued from p.* 340.)

"Our idea of the *distance* of near objects is evidently acquired from experience, and is suggested by the muscular sensations which are produced by the contraction of the adductor muscles of the eyes. When we direct our eyes towards a near object, a certain degree of convergence takes place between their axes; the degree increasing as the distance between the object and the eyes diminishes, and *vice versâ*. We instinctively interpret the sensations thus produced, in such a manner as to be able to compare, with great accuracy, the relative distances of two objects that are not remote from the eyes. This intuition, however, is evidently one of the *acquired* kind, as may be seen by watching the actions of an infant, or of a person who has recently become possessed of vision. When an object is held before the eyes, and an attempt made to grasp it, the manner in which the attempt is made clearly shows that there is no power of forming a precise idea of its situation, such as that which exists in many of the lower animals from their first entrance into the world.

"The impressions made upon the eyes have to be corrected by those received through the touch before the power of judging of distance is acquired. How much this power depends upon the conjoint use of *both* eyes, is evident from the difficulty with which any actions that require an exact appreciation of distance are performed by those who have lost the sight of one eye until they have acquired new modes of judging of it.

"In regard to remote objects we have not the same guide, since the convergence of the eyes, in viewing them, is so slight that the axes are virtually parallel. Our judgment of their distance is chiefly founded upon their apparent size, if their actual size be known to us; and also upon the extent of ground which we see to intervene between ourselves and the object. But if we do not know their actual size, and are so situated that we cannot estimate the intervening space, we form our judgment chiefly from the greater or less distinctness of their colour and outline. Hence our idea of it will be very much affected by varying states of the atmosphere, a slight haziness increasing the apparent distance, whilst a peculiarly clear state of the air will seem to cause remote objects to approach

much more closely. This want of convergence between the axes of the two eyes has the further effect of causing the pictures upon the two retinæ to be nearly identical, and, consequently, the idea of *projection* is not so strongly excited; nor are we able to distinguish with the same certainty between a well-painted picture in which the lights and shades are preserved, and the objects themselves in relief.

"Our notion of the *size* of an object is closely connected with that of its distance. It is founded upon the dimensions of the picture projected on the retina, and the dimensions of this picture will vary according to the laws of optics inversely as the distance;—being, for example, twice as great when the object is viewed at the distance of one foot as when it is carried to the distance of two feet. When we know the relative distances of two objects, the estimation of their real comparative sizes from their *apparent* size is easily effected by a simple process of mind; but this is not the case, when we only guess at their distances, and our estimate of the size of objects, even moderately remote, is as much effected by states of the atmosphere as that of their distance, the one being, in fact, proportional to the other. Thus a slight mist, which gives the idea of increased distance, will also augment the apparent size; because in order that an object two miles off should produce a picture upon the retina of the same extent with that made by an object one mile off, it must have double the dimensions. It is evident that our perception of the size of objects must be acquired by experience, in the same manner as that of their distance has been shown to be.

"We have now to consider briefly some other phenomena of vision, in which the acts of the mind that have been just alluded to do not participate. The contraction of the pupil, under the stimulus of light, seems to be effected by a sphincter muscle, which surrounds the orifice, and which is put in action by a branch of the third pair of nerves. This is an action with which the will has nothing to do, and it takes place entirely without our consciousness. Although it is due to the stimulus of light, yet there is reason to believe that the consciousness of the presence of light is not requisite, and that it is, therefore, a purely reflex action. The optic nerve seems to be the channel through which the impression is conveyed to the nervous centre; whilst the third pair is that through which the motor impulse is conveyed to the iris: but there is some ground for the idea that the fifth pair may in some degree convey the requisite stimulus when the optic nerve has been divided. That the *dilatation* of the pupil is a muscular action, appears probable from the fact that the

radiating fibres of the iris are of the same character with the *circular;* both sets constituting in man a peculiar variety of the non-striated form of muscular tissue. Through what nervous channel, however, the stimulus to this action is conveyed, has not yet been clearly made out. The contraction of the pupil is evidently destined to exclude from the interior of the eye such an amount of light as would be injurious to it; whilst its dilatation in opposite circumstances admits the greatest possible number of rays. There is a contraction of the pupils, however, which takes place without any change in the amount of light. This occurs when the two eyes are made to converge strongly upon any object brought very near them; and its purpose appears to be to prevent the rays from entering the eye at such a wide angle, as would render it impossible for them all to be brought to their proper foci, and would thus produce an indistinct image." These observations refer more particularly to man.

In treating this subject we must not lose sight of the situation of the eyes of the horse as contrasted with those of his master. The eyes of the horse are placed laterally, the eyes of man anteriorly. We possess one advantage in being able to view very near objects which are situated in front of us, but the advantage is a very small one. The horse has many advantages; he can take cognisance of objects both laterally and posteriorly placed. We cannot do so with the same degree of accuracy. This is to be accounted for from the fact of our eyes being anteriorly placed, and the eyes of the horse, as I said before, being situated laterally, together with the greater size of the globe in that animal. The eye of man when compared to that of the horse is, I should imagine, similar to a small telescope and a large one, both complete in themselves, but the larger affording a greater field than the smaller.

The way to ascertain the seeing powers of the horse is, to aim a blow at the head when standing before him. It will be observed he will have some difficulty in warding it, and of judging of the distance it is from him. Not so when you stand at his side.

Shying is caused in most instances by imperfect vision, although the generality of horsemen believe it is a trick or habit acquired from idleness, and they refer it to playfulness, skittishness, &c. I am forced to believe, from much practical experience amongst young horses as well as those more advanced in years, that in nineteen cases out of twenty the visual organ has not the power of perceiving things aright. There are several causes in operation to produce shying. I

have known many, very many horses with narrow and flat foreheads possessing small, ill-shaped eyes, desperate and dangerous shyers. The shape of the cornea has not been convex, but I have found it more prominent at one part than at another; they are what I have termed them, "angularly convex." I have noticed a similar shaped eye in the bovine race. These horses are the worst shyers of any I have met with. They generally have a fancy for shying at water marks in the road, especially after dark. There are eyes which are extremely prominent, and horses with eyes such as these must be very near-sighted; there are others with very flat eyes, although said to be so from old age. I do not find these animals shy as they grow old, but the reverse. I think, as a general rule, if an eye is perfect in youth, and up to eight or twelve years old, the possessor of that eye will not be found to become a shyer, as these animals are not often found so old as to have impaired vision. I have been acquainted with hundreds of old horses that have not shyed in their old age. The shaped forehead to which I have alluded has been found to exist in nervous and ill-tempered horses. When they are bad tempered, and shyers to boot, it becomes dangerous to drive them. They seem to make a point of starting at an object when there is no difficulty in the way, which becomes very annoying. I am not aware of any writer having noticed this peculiarity. No doubt hundreds of veterinarians have made similar observations, but I do not know of any such having been recorded.

Shying may be considered to be one of the most unpleasant, and is oftentimes a dangerous practice. As veterinary examiners we are not expected to make any remark about the shape or the shying propensities of a horse when brought for our inspection. This subject demands our especial attention. I know of no portion of our professional duties which requires so strict an investigation as that of the examination of the eyes. Who can tell what accidents happen from riding and driving shyers? I think I could name several which owed their origin to defective sight.

In giving an opinion as to soundness, we ought to be called upon to speak as to the probability of the animal under examination being free from vice in this respect. I say vice, because it is known by that name, not that I can recognise the name as being a proper designation of shying. I am of opinion that an animal found to be a shyer is indeed unsound, although it has been held by some great authorities that if an animal has been formed in a certain manner it does not constitute unsoundness. "Provided this peculiarity does not

interfere with the natural usefulness of the animal, then it may be said he is sound." But if that peculiar formation of parts can be proved to exert a powerful influence in the carrying on the function of those parts whereby they are materially impaired, then, I think, it amounts to unsoundness.

It will be well to consider the causes of shying in the horse. Youatt states at page 133: "There is a shying often the result of cowardice, or playfulness, or want of work, but at other times proving beyond contradiction a defect of sight even more dangerous than blindness,—a loss of convexity in the eye, lessening the convergency of the rays, and throwing the perfect image beyond, and not on, the retina. There is a striking difference in the convexity of the cornea of the colt and the old horse; and both of them, probably, may shy from opposite causes,—the one from a cornea too prominent, and the other from being too flat. In the usual examination of the horse previously to purchase, sufficient attention is not always paid to the convexity of the cornea." Here, then, it will be seen that this acute observer has drawn attention to one cause. At pages 453 and 454, Mr. Youatt treats largely upon this habit. His remarks, together with those of the late John Lawrence and Mr. Castley, seem to lead us to the belief that almost all cases of shying are produced by play, skittishness, or fear, &c. The anecdote found at page 455 is very interesting, but it does not explain anything. I could, if time permitted, relate several instances of horses disliking to enter a stable. I have had personally to superintend the getting of them in to their places, and I believed at the time I could easily solve the mystery by an examination of the head and the eyes.

(*To be continued.*)

CASE OF RUPTURED STOMACH OF A HORSE.

By G. Naden, M.R.C.V.S., Speenhamland, Newbury, Berks.

Dear Sirs,—I send you the stomach of a thorough-bred horse, "Attaman," who came under my care on Saturday evening last. It appears that about 6 p.m. the animal had all the symptoms of an attack of colic, and an anti-spasmodic draught, composed of Sp. Æth. Nit., Tinct. Opii, et Solutio Aloes, was given to him by his trainer. The legs were also bandaged and hand-rubbed. But as the breathing

got worse, and the legs and ears could not be kept warm, and other unfavorable symptoms presented themselves, Mr. Dover sent for me; and he informed me, before I entered the box, that he felt confident it was a fatal case.

I saw the horse at about 10·30 p.m. The ears and legs were then deathly cold, the pulse very quick and wiry, the nostrils distended, and the breathing hurried. I was told that he had voided fæcal matter several times during the day, that it was rather more pultaceous than usual, but that he had not been seen to pass any urine. A ball consisting of

Hyd. Chlor., ʒj, cum Belladonnæ Ext., ʒij.

was given, and also a draught containing

Tinct. Opii, ℥j;
Sp. Ammon. Aromat., ʒj;
Spt. Æther. Nit., ʒj;
Aquæ, Oj.

The abdomen was blistered with mustard and ammonia. The horse seemed much relieved from pain after the medicine was administered, and about an hour afterwards broke out in a most profuse perspiration, so much so that he had to be scraped from head to foot, and dry clothing put on him frequently. He also commenced nodding his head in a most strange manner, and walking round his box, the breathing becoming more hurried. These symptoms continued with little change until 5 a.m. on Sunday morning, just eleven hours from the commencement of the attack, when he suddenly dropped, and died in a few seconds. He did not try to roll or lie down after my arrival.

Thinking the case somewhat interesting, and the horse being a valuable one, I have forwarded to you the diseased parts, hoping to have your opinion.

I have given, I fear, but an imperfect account of the case; but should you wish for further particulars, I shall be most happy to send them.

I from the first thought that there must be a rupture of some of the abdominal viscera, but of what organ I was at a loss to decide. I think you will agree with me that some of the symptoms we generally find in a case of ruptured stomach were absent. I made a *post mortem* examination this morning. Upon opening the abdomen it was at once apparent that there was a rupture either of the stomach or intestines, as portions of ingesta were adhering to the intestines and the membrane lining the abdomen. I found the stomach ruptured, and in the state I now forward it to you. The

horse had not been able to trot well for some time before the attack.

Faithfully yours.

To the Editors of 'The Veterinarian.'

DISEASED KIDNEY OF A PONY.

By W. Coupland, M.R.C.V.S., Little Sutton, near Chester.

Gentlemen,—I have forwarded to you, by train, some morbid specimens, the history connected with which I append; and should you think the case of sufficient interest to appear in your invaluable Journal, I shall have much pleasure in seeing your remarks thereon, as I have never met with a similar instance of organic disease.

History.—On Friday last, June 5th, I was requested to examine a gray pony, twelve hands and a half high, three years old, the property of W. Eckersley, Esq., of this place. I found the animal in a very hopeless condition; he was standing, and could with difficulty be made to move, and when moved he staggered about like a drunken man. The extremities were deathly cold, the pulse imperceptible, the mucous membranes blanched, the mouth cold and clammy, the countenance haggard; he repeatedly turned his head to look at his abdomen, and just before my arrival he had micturated fully three quarts of almost pure blood, a great deal of which was lying coagulated upon the straw, and frequent attempts were made to pass more. Pressure upon the loins and abdomen gave little or no pain.

Upon making inquiries, I ascertained that the pony was found in the field that morning lying down with his head on his side, and unable to rise. He was assisted home, being about two miles away, and it took as many hours to complete the distance.

Seeing the animal was rapidly sinking, I ordered stimulants, had him well hand-rubbed, his legs bandaged, and the body well clothed afterwards, having placed him in a well ventilated loose box. I gave injections of warm water every half hour, and linseed tea to drink in lieu of water.

I saw him again in two hours' time, when the following symptoms were present:—pulse still imperceptible, the heart-beats number 140 per minute; breathing considerably accelerated; he has not voided any more blood, and the attempts

to do so are not so frequent; the extremities are still cold. I ordered the same treatment to be continued, but he gradually got worse and died in five hours from my first visit.

Upon making further inquiries into the previous history of the animal, I gleaned the following information from the horse-keeper, who, I may say, is a very intelligent and trustworthy man. The pony had been in the hands of the present owner for about twelve months; his work has never been very laborious, he being bought almost entirely for the use of Master Eckersley (nine or ten years old), who generally rode him two or three hours each day. The pony always had a fair allowance of corn, hay, &c., but for all that he never looked well, always having a very unthrifty appearance, and when standing in the stable would invariably have his back arched, and shivered or shook as if chilly. Some two months ago the horse-keeper in question had occasion to take the pony a short distance of three or four miles, but it was with difficulty that he accomplished the journey, as he went lame, sometimes upon one leg and then the other, until all four had become affected more or less, the hind ones more particularly. Soon after this the pony was turned out to grass, and after six weeks "running out" there was no visible alteration in his condition.

Post-mortem examination.—The following morning, June 6th, I made a careful examination of the body. Upon opening the abdominal cavity and removing the intestines, a large tumour was revealed to view upon the right side, being firmly attached to the liver, diaphragm, and some of the small intestines. It had somewhat the appearance, before being cut into, of a distended stomach, being fully the size of the stomach of a small pony; but upon closer inspection it turned out to be the right kidney. When removed and cut open, there escaped fully four quarts of thick fluid, having the appearance of *drab-colour paint*—this being the best comparison I can make. The bladder was much distended with coagulated blood and fluid, there being from two to three quarts in it. The left kidney, which I likewise forward, is somewhat increased in size, and there were slight inflammatory patches upon the small intestines, where the tumour was attached. The remaining parts, including the lungs, heart, large intestines, &c., were perfectly healthy.

[The right kidney was considerably enlarged, and numerous sacculi existed within it, which were more or less distended with grumous matter. The entire structure of the kidney was so much diseased, that it was evident the organ

had long ceased to perform its special secreting function. The bladder, however, was healthy, as was the other kidney.]

TREATMENT OF COLIC.

By J. Relph, Nook, near Carlisle.

A perusal of the ably written article on "The Treatment of Colic," &c., in your number for March, has recalled to my mind the case of an aged mare that came under my care for subacute enteritis and impaction of the bowels about five years ago. The resistance offered to the action of laxatives induced me to make an anal examination, when a firm mass of fæcal matter was very easily felt through the coats of the intestines; but I could not grasp it so as to break it down. Laxatives with copious injections were continued twice a day without any visible benefit till about the seventh day, when a dung-ball, held together and coated with mucus, was discharged. It was of an ovate form, its diameter about nine inches by five inches. As an injection I employed decoction of linseed with soft soap; solution of aloes and tobacco were also used, and, indeed, the pump was resorted to until very strong efforts were made by the mare to eject the fluid. Superpurgation now set in, under which she sank. The liver, I remember, was found diseased; but not having made any notes of the case at the time, this is a rough sketch of it only.

Unless tympanitis or some other circumstances forbid the use of a large injection, I most commonly throw up about a pailful, either for a horse or cow; and I offer this as one instance of the successful employment of the *floating process* for the removal of an agglutinated fæcal mass.

Adverting to the subject of colic, I would mention that for thirty years I have used assafœtida as an antispasmodic. As an ingredient of the colic mixture I prefer it in the following form:—Take of assafœtida and soft sugar, of each ʒiij; beat them into a mass with Spts. Vini, ʒij; then add soft soap, ʒj; and when well incorporated take them from the mortar, and place the mass in a temperature of about 90° for a few hours; afterwards dissolve in Liq. Ammon. Sesquicarb., Oiss. Dose, ʒj to ʒiij.

Why is the Acid. Aceticum Fort. not used in making the Liq. Ammon. Acet.? It reduces the bulk of the dose by one seventh; and I find it much handier than the prescribed form of the pharmacopœia.

Facts and Observations.

The Alkaline Metals. — Recent discoveries have doubled the number of these bodies. Originally they were potassium, sodium, lithium. To these must now be added, it appears, rubidium, cæsium, and thallium. Not long since, an idea was entertained by some persons that chemists were about to return to the alchemical theory of transmutation of bodies. This arose from an opinion broached by Dumas, that substances having the requisite similar relationship to each other might render this change possible. In the *triad* groups, so designated, this philosopher observed that the *intermediate* body has most of its properties *intermediate* with the properties of the two extremes. Take, for instance, sulphur, 16, silenium, 40, and tellurium, 64 : half of the extremes will give the intermediate number, 40. So chlorine, 35, bromine, 80, iodine, 125; here, again, the mean of the extremes of the group is 80. It is in such bodies or groups as these that transmutable changes may be hoped for; not in the conversion of lead into silver, or mercury into gold, the object for which alchemists untiringly worked. The commission appointed by the French Academy remark that the equivalent of sodium, 23, is exactly the mean between that of potassium, 39, and lithium, 7. Further, that if double the weight of sodium be added to that of potassium, the equivalent of rubidium, 85, is obtained; and by adding double the weight of sodium to double that of potassium, we obtain very nearly that of cæsium, 120; while double the weight of sodium and four times the weight of potassium gives nearly that of thallium, 204, which stands in this list, as it regards the weight of its equivalent, in the opposite extremity of the scale to lithium.

Obtainment of Iodine.—According to the statements made by Mr. E. C. C. Stanford, F.C.S., in the ordinary mode of obtaining kelp by the burning of sea-weeds a large portion of the salts of iodine, amounting to nearly one half, is driven off and lost. He therefore proposes to distil the weed in closed vessels. By this mode of treatment, he says, all the iodine can be retained, the carbon will not be allowed to act upon the sulphates of potash and soda, all waste of weed will be obviated, and the charcoal left after the distillation may be used, with other matters, for heating the retorts.

ANTIDOTE FOR ARSENIC.—A writer in the *Chemical News* suggests that, to obtain the peroxide of iron in a hydrated state, a solution of the persulphate of iron should be kept, and when the oxide is wanted to add to it calcined magnesia in excess. This mixture being administered, saves the trouble of washing the precipitate, and at the same time gives a purgative to the patient.

THE BLOOD-CORPUSCLE.—Dr. Roberts, at a meeting of the Microscopical Section of the Manchester Literary and Philosophical Society, exhibited some mounted specimens of blood-corpuscles from albuminous urine, which showed an appearance as if the contents of the cells had separated from the cell-wall, and become aggregated round the centre, like a nucleus. When these corpuscles were treated with magenta, the central portion was either not coloured at all or only faintly so, whereas the circumferential portions became deeply tinted. By treating fresh blood with an excess of a solution of carbolic-acid this appearance could be produced at will. In the blood-corpuscles of the fowl a similar effect was produced by the carbolic-acid solution; the cell-contents appeared to detach themselves from the cell-wall and to collect round the nucleus. The appearances presented strongly suggested the idea that the cell-envelope of the blood-disc was a double membrane; that the inner separated under certain circumstances from the outer membrane, and shrank in toward the centre. Dr. Hensen, of Kiel, seems to have convinced himself that such is the case in the blood-disc of the frog, and he compares the inner membrane to the primordial utricle of the vegetable cell. Of the prolongations described by Dr. Hensen, as stretching radially between the shrunk inner membrane and the outer one, Dr. Roberts saw nothing. If the said view of the structure of the blood-cells were substantiated, it would greatly facilitate the explanation of the effects produced on these cells by magenta and tannin.

BLACK SKIN AND PERIOSTEUM.—We noticed the occurrence of this in fowls in a previous number. Mr. W. B. Tegetmeir, writing on "Variations in Plumage," in the *Intellectual Observer*, states that under the title of "Coq à Duvet," Temminek has described those birds which are known at our poultry shows under the title of *silk fowls*. Of these birds he adds, "I possess several specimens. They are brought from many parts of eastern Asia and the Indian Archipelago. They are small in size, and are remarkable as

having the skin and periosteum of a dark bluish-black colour. Their flesh, however, is perfectly white, and surpasses that of other poultry in flavour. Mated with other varieties, he has found the mongrel offspring to have a dark skin and periosteum, but the plumage is of the ordinary colour and character.

Detection of Cantharidine.—Mr. Tichborne, in an article in the *Chemical News*, states that chloroform is the best solvent of cantharidine we have. In mixtures suspected to contain this principle of the blistering fly, for its detection he proposes to add to every half pint of the fluid one ounce of chloroform. The whole is to be repeatedly shaken during the day, and left to subside until the next morning. The chloroform is then carefully separated with a funnel, and passed through bibulous paper. It is then allowed to evaporate spontaneously to dryness on a watch-glass. A small pellet of lint, he says, which had been previously teased out, about half the size of a pea, was moistened with a drop of olive oil, and with this little pellet the whole of the film of extractive matter was mopped off the watch-glass. The lint was then placed upon the arm, and covered with a piece of goldbeater's skin. When taken off, in three or four hours, considerable rubefaction had taken place, and after wiping it off with chloroform a large vesicle was formed. As small a quantity as one grain of flies was detected in solution by this means, and to look for less than this in a medico-legal investigation, he adds, would be useless, as this is much under a medicinal dose.

Progress of Chemistry.—The active progress of chemistry—perhaps the most active of modern sciences—leads continually to new results or to modifications of existing conclusions. Ozone has of late years been a very prominent subject of research and discussion; but further research shows that what in numerous instances was described as ozone is in reality nitrous acid or nitrate of ammonia; a fact now recognised by Schoenbein himself, the discoverer of ozone. One consequence of this fresh discovery should be to render observers cautious in the use of what is called "ozonometric paper;" that is, paper saturated with starch and iodide of potassium, for the purpose of determining the presence and quantity of ozone in the atmosphere. For if it be true that the paper when moistened for experiment does not indicate the presence of ozone, but the energy only with which nitrite of ammonia is produced during the evaporation

of the moisture, it is clear that the so-called ozonometric test is a fallacy. A remarkable instance of the advantage which medical men may derive from chemistry has been published in the reports of the hospital Hôtel Dieu, at Paris. A young student wrote a thesis in which he showed that gangrene and deficiency of oxygen were to be regarded as cause and effect. Dr. Laugier, surgeon in chief of the hospital, having a case of spontaneous gangrene under his care, proceeded to test the theory. The patient, a man seventy-five years of age, had the disease in one foot, one toe was mortified, and the whole member was in danger. The diseased part was enclosed in an apparatus contrived to disengage oxygen continuously, and in a short time the gangrene was arrested and the foot recovered its healthy condition. A similar experiment tried upon another patient equally aged, was equally successful, from which the inference follows that treatment with oxygen is an effectual remedy for a disease which too often infests hospitals. M. Pasteur, the well-known chemist, has presented a paper to the Academy of Sciences at Paris on the part played by the oxygen of the atmosphere in fermentation, putrefaction, and slow combustion, which throws a flood of light on three natural phenomena, which, as some readers are aware, by accomplishing the destruction of organized matter, tend to the perpetuity of life on the globe. We content ourselves with this brief notice for the present, reserving further discussion until the paper shall have been published in full; we shall only add, that the opinion among members of the Academy was that M. Pasteur has, by his new researches, demolished alike the hypothesis of spontaneous generation, and the old theories of fermentation. The soapmakers of New York and Boston are now using water-glass—*liquor silicum*—as the alkaline constituent in the manufacture of soap. Formerly, they mixed resin largely with the fat, in order to keep down the price of soap; but since the blockade of the Carolinas, whence the supply of resin was drawn, they have had to discover a substitute. They have found, within the last two years, "that highly silicious water-glass assimilates perfectly with soap, and decidedly improves its quality;" and now the so-called "soap-liquid" has come into general use among the soapmakers of the Northern States. There is reason to believe that the cheapness of the article encourages fraud, for we observe that a good-looking soap can be made which contains full 60 per cent. of the silicate, and that some manufacturers, instead of silicated soap, produce "water-glass in bars."—*Chambers's Journal.*

Diseased Meat.—It seems that in the two years ending Michaelmas, 1862, 254,919lbs. of dead diseased or putrid meat were seized in the City of London, besides 7741 head of poultry, 691 head of game, and 97 quarters of venison, unfit for food.

Heat and Light-giving Rays.—It is well known that the rays of heat and light are naturally associated. Hence, some philosophers have considered heat and light to be modifications of one principle. From several sources of artificial light the accompaniments of the heat-giving rays is often so great as to cause pain and discomfort to the visual organ, through their becoming absorbed by the humours of the eye in their passage onwards. "Solar light," says Dr. Franklin, "has one great advantage over that from all other sources, inasmuch as it is attended with less heat, and consequently ordinary daylight produces less discomfort in the eye than any artificial light." Yet we do not know that even this, under certain conditional states of the eye, as for instance, inflammation, often proves too stimulating, therefore we cover the eye, or shade it by some means, so as to prevent the entrance of the red-rays, which are the strongest and with which the heat-giving rays are most largely and commonly mixed. The following table, by Dr. Franklin, gives the amount of these rays that are reflected and absorbed by the various media of the visual organ of certain animals:

	Eye of Ox.	*Of Sheep.*	*Of Pig.*
Rays reflected at surface of cornea .	4·0	4·0	4·0
Rays absorbed by the cornea . .	59·8	56 9	57·5
,, aqueous humour .	19·2	—	20·6
,, crystalline lens .	6·8	30·7	7·2
,, vitreous humour .	2·5	—	1·6
Rays which penetrate to the retina .	7·7	8·4	9·1
	100·0	100·0	100·0

How is it that the Stomach resists the Action of the Gastric Juice?—Various reasons have been assigned for this. It is well known that in health during life no effects are produced by the succus gastricus on the stomach, but after death such is often found to have taken place. On this account John Hunter referred this immunity to the protecting agency of the vital principle. The majority of physiologists, however, consider the cause to be the intervention of the mucous secretion. Both of these views are thought to be untenable by Dr. Pavy, who has found that the mucous

membrane may be entirely removed from a portion of the stomach, and food be digested without the least appearance of any action on the abraded surface. Also that on parts of living animals, such as the hind extremities of a frog and the ear of a rabbit, being introduced into the stomach of a dog, they will become partially digested. He, therefore, believes the cause to be the alkalinity of the blood, which, circulating through the coats of the stomach, neutralizes the acidity of the gastric juice.

KEROSOLENE.—At page 669, vol. xxxiv, we noticed this anæsthetic agent, advocated by the American pharmacists. The composition of this hydro-carbon, or rather mixture of hydro-carbons, does not seem to be definite, which will militate against its employment, as its action, consequently, cannot be depended on. It is the product of the distillation of a very bituminous kind of coal, coming over in an impure state, when the coal is heated to a temperature of between 600° and 890° Fah., and is afterwards purified by fractional distillation over sulphuric acid. Pure kerosolene is the lightest liquid known, its specific gravity being only ·6346, or less than two thirds that of water. It is colourless, has little odour, and is so volatile that it may be nearly made to boil by holding a small bottle containing it in the warm hand. This excessive volatility unfits it for use as a light or heat-giving naphtha; but, besides its use as an anæsthetic, it is applicable to all the purposes to which benzol is commonly applied. The solvent power of kerosolene is extraordinary. It dissolves fixed oils in all proportions; resin, wax, and cocoa-butter, freely; and mastic, caoutchouc, and iodine, sparingly. It is miscible with alcohol, turpentine, ether, and chloroform; but not with water. This new substance has the advantage over benzol of leaving absolutely no odour behind, when used to clean woollen or other fabrics from grease; but its use in medicine, as a safe substitute for the dangerous chloroform, will be, at present, curtailed by the difficulty experienced in procuring it of a definite constitution.

THE VETERINARIAN, AUGUST 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

THE ADVANTAGES OF ASSOCIATION.

It has been said by the Wise Man that "iron sharpens iron." We have ever been earnest, and we hope honest, advocates for the periodical meeting together of the members of our profession, and in the earlier period of our life we made not a few efforts to bring this about. To some extent we succeeded, although not so fully, nor so satisfactorily, as we had anticipated. This non-success, in a great measure, we believe, arose from the want of co-operation, the result of that apathy which still unfortunately lurks among us, exerting its baneful influence. Others did not see as we did the advantages that must have followed had this been carried on and extended.

To point out the benefits arising from the associating together of persons whose interests and pursuits are the same, would be altogether supererogatory. It must be patent to all, for even the shallowest mind cannot fail to perceive that a large amount of good must in the end result, and self-interest alone would induce him to become one of the body, even were he influenced by no higher motive. Of the truth of this position we have abundant illustrative proofs in nature. The microscopic Foraminifera would be altogether useless units in the scale of creation if they were separate and alone; but by combination they effect seeming wonders, building up coral reefs and forming oceanic barriers that sometimes defy the ingenuity and the power of man to overcome. According to Mr. Rymer Jones, these minute organisms are more numerous than any other beings. He states that not even those minute crustaceans, whose myriads crowd the seas until they give their colour to the waters—not even the Infusoria themselves, whose shells compose the polishing slates of commerce, or constitute the *bergmehl* and other rich deposit of animal or vegetable

origin—can be compared with them. Six thousand of their exquisitely formed shells have been counted in a single ounce of sand, taken at random from the shores of the Adriatic Sea; and in a similar quantity collected in the Antilles M. d'Orbigny calculates that there were not fewer than 3,800,000 of this prolific class of animals. Yet the progressive accumulations of these tiny shells form banks in the sea that become dangerous to the navigator, fill up ports and harbours, obstruct gulfs and straits, and assist, in conjunction with the corals and madrepores, in building up those reefs and islands which are continually making their appearance in the tropical regions of the ocean. Mr. Jones adds that it would be easy to prove that these microscopic organisms materially affect the geological structure of our planet. A single species has formed, in Russia, deposits of enormous thickness. The entire mass of the cretaceous system is crowded with their remains. They make up the limestones of which the largest Egyptian pyramids are constructed. They are met with in countless numbers throughout the tertiary strata of France, Asia, and Africa, and nowhere are they more numerous than in the calcareous deposits of the vast Parisian basin.

Surely in this alone demonstrative proof is given of the benefits resulting from united labour; not to adduce others, which would be easy, since in nature we see that all things co-operate for the general good. The integrity of the universe, too, is maintained by it. Incessant motion and incessant change are taking place, yet there is no confusion, no discord, no loss. Each reciprocates the other, and supplies the individual wants of each; for all are but parts of one stupendous whole.

Knowledge has been aptly compared to light; and this, as if to show to man its importance and its worth, was formed by the Creator on the first day, and only it. Conceive, if the mind be capable of realising opposites so great, what must have been the mighty difference when "the earth being without form and void, and darkness upon the face of the deep," that Chaos heard the command—

"Silence! ye troubled Waves! and thou, Deep, peace!"

'Twas then that the omnific word went forth, "Light be! and light was." And scarcely less than this is the moral contrast between ignorance and knowledge.

To speak of the advantages derivable from a free discussion of those subjects that alike affect every member of a common profession, would be equally as supererogatory as that which we have already dwelt upon. Indeed, the acceptance of the first position involves this second head as a sequel, since it would be next to an impossibility for an association of persons to take place without it. During it facts are elicited by which truth is made manifest, and the stream of truth deepens and widens as it progresses, causing fertility and luxuriance wherever it reaches. At first we may have only the blade, but it will soon be followed by the ear, and after that the full corn in the ear, giving food to the eater and seed to the sower; for the diffusion of knowledge is twice blessed, "it blesses him that gives and him that takes."

Now, while it is clear that persons could not possibly meet together whose avocation is the same without conversing on points of greater or less interest to them, it is quite as clear that some system must be adopted so as to secure the object in view. First and foremost would be the reading of essays on a given or chosen subject. Here, again, the benefit to be derived is so plain and self-evident as to need no argument to enforce it. The amount of information thus obtained is immense. The essayist culls from every source, collates the opinions of others, and adds those of his own experience, thus enlarging the practical worth of his labours.

Nor is this all: in the debate that subsequently takes place the views of the different members are elicited, matters affecting the general body are brought forward for consideration, and novelties in the treatment of disease, or the employment of new remedies, communicated, so that in the multitude of counsellors it is found there is wisdom. As to any difference in opinion that may arise during the discussion, this is to be expected, and perhaps it is also desirable, provided always that the courtesies of society be maintained. Guizot has said,

"Diversity is the natural condition of human activity. In creating us intelligent and free, God foresees and permits differences of opinion." We need not reiterate what we have already advanced as to the desirability of each county possessing its local association. As a body, we are sufficiently numerous for this purpose, and who are the certificated members of the profession in a county may now be easily ascertained by a simple reference to the 'Register of the Royal College of Veterinary Surgeons,' where they are wisely classified for the first time.

To all this would follow the giving publicity to the transactions of the different associations, for exclusiveness is opposed to the spirit of the age, and we are told not to hide our light under a bushel. The vantage-ground on which we stand at the present day is very high, and the facilities for acquiring knowledge correspondingly great. Yet none of us know too much, or all that may be known, and even what we do know oftentimes requires to be tempered with judgment. We remember what Cowper has said on this subject:

> "Knowledge and wisdom, far from being one,
> Have ofttimes no connection. Knowledge dwells
> In heads replete with thoughts of other men;
> Wisdom in minds attentive to their own.
> Knowledge—a rude, unprofitable mass,
> The mere materials with which wisdom builds—
> Till smooth'd, and squared, and fitted to its place,
> Doth but encumber whom it seems t'enrich.
> Knowledge is proud that he has learned so much;
> Wisdom is humble that he knows no more."

In thought we are carried back to the time when to us was entrusted the editorship of the proceedings of *The Veterinary Medical Association.* For many years a goodly volume was annually edited by us, and sometimes we have regretted that the work was discontinued, as we believe it contained much valuable matter. But now all seems silent. We should not know that this useful society still existed were it not that Mr. Varnell, in his interesting description of the morbid parts sent to him, frequently states that he

found them worthy of being laid before the members of it. Surely these things ought not so to be. Are their doings such as shun the light?—or are the members fearful that others will become as wise as themselves? We cannot believe either the one or the other of these inquiries to be true. It is merely a shadow of the cloud to which we have already adverted, one that has so long rested on the body, the silver lining of which, we hope, will ere long be more clearly developed. May it be completely dissipated, for until this is done no true union can exist, and, consequently, no real good result.

We have been led to make these remarks from a letter that appeared in this Journal, by Mr. Coates, the Secretary of the Royal College of Veterinary Surgeons, in which he proposes the formation of a "Metropolitan Veterinary Medical Society." It has our hearty concurrence, and we sincerely hope it will soon be established, for we know there are those in the metropolis possessing talent and abilities sufficient to render their meeting together of great worth to the profession. Nor will the members of the society be confined entirely to them. Every graduate will be at liberty to become a member, while students also, we presume, will be permitted to attend the meetings; and from one and all such contributions will be received as cannot fail to enhance the interests and promote both the advancement and estimation of the veterinary profession in the eyes of a discerning public, enabling it to take and to maintain its *locus standi* as a recognised division of science.

As to the place of meetings, we can see no objection to the College itself being devoted to them. It is centrical, and the rooms are admirably suited for the purpose, while the common object is the general weal of the profession. In conclusion, let us not forget our motto, "Vis unita fortior," remembering also that the Preacher has said, "A threefold cord is not quickly broken;" and therefore the College, the schools, and the profession, should be united in a strong and indissoluble band, for in reality the three constitute but one body, and neither can say to the other "I have no need of you."

THE COLEMAN PRIZE.

The Governors of the Royal Veterinary College, at their meeting July 11th, having received the report of the professors relative to the comparative merits of the papers of the several competitors for the above prize, proceeded to open the sealed envelopes bearing the corresponding mottoes, and afterwards made the following awards:

The Silver Medal.—To Mr. S. L. Buckley, Oldham, Lancashire.

The Bronze Medal.—Mr. C. J. Pyatt, Nottingham.

Certificate of Merit.—Mr. Thos. Walley, Market Drayton.

Extracts from British and Foreign Journals.

NEW THEORIES AND FACTS OF HEAT.

"A pound of iron on being heated from 32° to 212° expands by about 1-800th of the volume which it possesses at 32°. Its augmentation of volume would certainly escape the most acute eye; still, to give its atoms the motion corresponding to this augmentation of temperature, and to shift them through the small space indicated, an amount of heat is required which would raise about 8 tons 1 foot high." . . . . . The velocity of bodies falling to the earth is known to augment as the height from which they fall is increased, but not in simple proportion. "If the height be augmented fourfold the velocity is only augmented twofold; and if the height be increased sixteenfold, the velocity is only augmented fourfold, but the heat generated by the collision of a falling body increases simply as the height, and consequently as the square of the velocity." Thus trebling the velocity will yield, on arrest of the motion, nine times the heat. Every one knows that when the break is applied to the wheel of the railway carriage, the stoppage of motion is accompanied by a great evolution of heat; and as the weight of the earth is enormously greater than that of a railway wheel and train, and its velocity of rotation immensely quicker, a similar arrest of

our globe would give rise to a far intenser heat; so that, as Mayer and Helmholz have calculated, it would not only be melted, but a large portion of it would actually be converted into vapour. Shooting at a target warms the ball that strikes, and the target which is struck. Motion is arrested, and an equivalent quantity of heat evolved. From this analogy it struck Mayer, in 1848, that the sun might have the heat which he gives out restored by the collision of bodies of sufficient size, shot at him with sufficient force; and the same idea has been worked out in this country by Professor William Thompson and others. . . . . So long as the Newtonian hypothesis, that radiant heat consisted in the actual emission of particles shot out in all directions from the radiating body, was admitted, the phrase, giving out heat, had a distinct and intelligible meaning; but now that this supposition is generally abandoned, we cannot consider radiating bodies as actual losers of any substance called heat, but simply as changing their mode of action as they grow cold. While they are hot they can excite heat in other bodies by a radiating process under which they themselves grow cooler and cooler, unless they experience a counteraction of a similar or different kind by which their heat is restored. Our sun, shining day by day, must, in accordance with this law, grow cold in time, unless his own heat receives continual additions equal to the amount of his loss. It is assumed—perhaps without sufficient warrant—that the sun is hot because he is the cause of heat in other bodies; and it is certain that if this giant orb follow the law that rules the radiation of caloric, he must be constantly losing the capacity of warming, and thus keeping alive his portion of the universe, unless his heat-giving power be renewed as fast as it disappears, through the taking of some other form. Very slow would be the so-called dissipation of his heat; all the future generations of man might pass away, our globe might change and change again in the arrangement of its materials and the nature of its climate, while its fellow-wanderers through the realms of space might pass through alterations no less important—there might be time, and ample time, for modifications so vast to take place; but, however remote the final period might be, "the sun himself must die," unless his life experiences constant renovation, as well as suffers constant decay.—*Intellectual Observer.*

DESTRUCTION OF SMALL BIRDS.

Although it contained some objectionable clauses, which have been either amended or entirely withdrawn, it is with no small degree of satisfaction that we perceive, by the parliamentary reports, that Mr. Paull has carried the reading of his bill to arrest the indiscriminate destruction of small birds by means of poisoned grain. He says, and says truly, it is for the interest of the farmers, who are suffering greatly from the increase of slugs and insects, which hitherto have been kept under by small birds.

We look upon most of the attempts made to legalise the sale of poisons as visionary—an endeavour to deal with that which cannot be accomplished. For what is a poison? Linnæus has said, "Food, physic, and poisons merge into each other by undefinable gradations."

A writer in the *Leisure Hour*, after denouncing the wholesale slaughter of the small birds, thus appropriately closes his sensible observations:

"This frightful practice of poisoning is one of the hateful wiles of human selfishness, coupled with the grossest ignorance. Of selfishness, because the poisoner assumes that the land and all its products are his exclusive property, and that the benevolent Creator has designed them for his sole use. He does not recognise the claims of the lower orders of existence; according to him, they have no business to exist at all; he ignores and repudiates the covenant under which God has made him master of the world—the covenant being, that he should exercise the duty of humanity towards every living creature; he imagines that the songsters of the grove stand in the way of his profit, and therefore, instead of acknowledging that they

> "'Are free to live and to enjoy their life
> As He was free to form them at the first,
> Who in his sovereign wisdom made them all,'

he dooms them to death, spurns their claim to his regard, and, as far as he can, blots them out of the divine scheme of life. Brutal as this conduct is, however, it is not half so brutal as it is disgracefully ignorant and presumptuous. The great Author of nature has weighed everything in accurate scales. He who decreed that every living creature, great and small, should be the food of other creatures, took care so to strike the balance that no particular race should increase in such numbers as to be tyrannous to the rest, while all should

be numerous enough to minister to the wants of his chief creature, man. To interfere with this grand and beneficent arrangement by the gratuitous and wanton destruction of animal life, is the most senseless species of meddling of which man can be guilty, and is sure to result in the defeat of the very purpose it was intended to further. In the matter of the birds this has been proved beyond a doubt, and additional evidence is being daily furnished of the fact. Where the birds have been poisoned off, the wireworm and the fly are desolating the field crops; and the farmers are compelled to hire boys and girls to do ineffectually what the birds once did for them gratuitously and well. In our gardens, the plague of insects is now felt to be far greater than it was in former years; and every horticulturist who competes for a prize knows too well that his chance of success depends not only on the excellence and treatment of his plant, but also on his preserving it by constant watching against the assaults of grubs and caterpillars.

"We might say much more, but we forbear; we have only said thus much in the hope of checking, if it may be, a sad crime, which is also a sad blunder, and of freeing our friends and favorites the small birds from unmerited persecution."

ON THE CALABAR BEAN AS A NEW AGENT IN OPHTHALMIC MEDICINE.

In the *Pharmaceutical Journal*, vol. xiv, p. 470, will be found an interesting paper by Dr. Christison, on the general properties of the "Ordeal Bean of Old Calabar," and quite recently Dr. Argyll Robertson (*Edinburgh Medical Journal, March*, 1863) has investigated its properties as a new agent in ophthalmic medicine. Dr. Robertson observes:—"For more than a year past I have recognised the numerous advantages that would flow from the discovery of a substance which, when applied to the conjunctiva, should produce effects exactly opposite to those well known to result from belladonna or atropine; which should stimulate the muscle of accommodation and the sphincter pupillæ as the above-named remedies paralyse them. With the view of discovering such an agent, I endeavoured to ascertain from experiments of my own, and from the writings of previous observers, whether any of the common vegetable principles possessed this property. These investigations were, however, productive of no satisfactory results, until my friend, Dr. Fraser,

informed me that he had seen contraction of the pupil result from the local application of an extract of the ordeal bean of Calabar. I resolved to investigate the action of this substance, and, above all, to ascertain whether it exerted any influence on the accommodation of the eye. With some difficulty I got a few Calabar beans, and, with the view of obtaining their active principles in a convenient form, prepared from them three extracts, of varying strengths, in the following manner: the weakest of the three was made by thoroughly digesting thirty grains of the powdered Calabar bean in alcohol, carefully evaporating the strained fluid to dryness, and then adding to the residue one drachm of water. This formed a muddy solution, of a light, reddish-brown tint. In strength, one minim of this solution corresponded to about half a grain of the bean. The second extract was formed by evaporating a portion of the first to about a quarter of its volume; so that one minim of this extract corresponded to about two grains of the bean. The third extract was the strongest, and was prepared like the first, except that the proportions differed; so that one minim of it in strength corresponded to four grains of the bean. With these solutions I then proceeded to perform the following experiments, in which I had the able assistance of Dr. Grainger Stewart, with the intention of elucidating the exact effects the Calabar bean is capable of producing on the eye."

Several experiments with this agent are then described, the details of which are too exclusively medical for our pages; but the following are the conclusions arrived at by the author: "These experiments prove that the local application of the Calabar bean to the eye induces, first, a condition of short-sightedness. That this is present, and the cause of the indistinctness of distant vision, cannot be doubted, as it is relieved by the use of concave glasses. The fact that objects appear larger and nearer than natural may be attributed to the induced myopia. And, second, it occasions contraction of the pupil, and, sympathetically, dilatation of the pupil of the other eye. We further observe, that atropine possesses the power of counteracting its effects, and, *vice versâ*, that it is capable of overcoming the effects produced by atropine. The first symptom noticed is dimness of distant vision, and shortly after the pupil becomes contracted; the symptoms also subside in the same order,—first, the derangement of accommodation, and then the affection of the pupil."

ENGLISH INK-GALLS.

At a late meeting of the Exeter Naturalists' Club, held in Exmouth, Mr. D'Urban read a paper on the "English Ink-Galls." Most persons, he said, must have noticed the hard, brown galls, about the size of musket balls, so conspicuous in winter on the oaks about Exeter. They are supposed to have made their first appearance in Devonshire about the year 1847. They were first noticed by Mr. Parfitt, who sent specimens of the insects causing them to Mr. Westwood, in 1848 or 1849. It has only lately, however, been determined to be *Cynips Kollari* of Hartig, a species well known in Germany. About three years ago it suddenly appeared in the woods to the north of London, in vast numbers. It is closely allied to *Cynips gallæ-tinctoriæ*, producing the ink-gall of commerce on *Quercus infectoria* in the Levant. The galls of the Devonshire species contain a considerable amount of tannin, making excellent ink, and yielding a good and permanent dye. Like all other insects which multiply rapidly, it is subject to the attacks of a parasite, which contributes to keep its increase within certain limits. This is a beautiful green chalcite, first bred from these galls by Mr. Parfitt, and described by him in the *Zoologist* for 1856, under the name of *Callimome Devoniensis*. Mr. D'Urban did not think that the galls occasioned much injury to large oaks, but to young trees they are very injurious, frequently distorting the leading shoot, and seriously retarding its growth. They make their appearance on the oaks in this neighbourhood early in July, and, growing rapidly, reach their full size in August. They are formed on the young shoots of the year, always in the centre of a bud, and are monotholasmous, that is, they contain a single individual only. Some of them produce the flies in September, nearly all being females. The males are remarkably scarce, and have but rarely been obtained. Some remain in the larva state within the gall all through the winter, and emerge in the spring. Few, however, of those hybernating escape the different species of tit, those little birds picking the hard galls to pieces to get at the fat white grub inside. The galls themselves are very persistent, remaining for several years on the trees. Those from which the fly has escaped may readily be known by the presence of a single round hole on one side. Mr. D'Urban then explained the manner in which galls are formed, and the mechanism of the instrument with which the gall-fly makes a puncture in the bark of the trunk or shoots, in the young bud, on the

leaf, or on the peduncles of the flowers, according to the part of the tree selected by a particular species, of which a great many infest the oak.—*Gardeners' Chronicle.*

ON THE BREEDING OF HUNTERS AND HACKS.

By Henry Corbet.

(*From the New Part of the 'Bath and West of England Society's Journal.'*)

(*Continued from p.* 422.)

We must, then, insist on the conditions as advertised by this Society for "a thorough-bred stallion to get hunters and hacks," as the main principle to go on. Such an animal, as I have already intimated, need by no manner of means have been a famous racehorse—a fact that of itself would go to place him beyond our limit, at the same time that it is anything but an indispensable item in his qualifications. The chief things we have here to look for are true symmetry, good action, a staying pedigree, and freedom from hereditary taint. A deep frame, a round barrel, on a short, wiry leg; a sensible rather than a "pretty" head, a well-laid shoulder, a good back, and plenty of bone. Never mind if his powerful quarters do droop a bit, so that they run down into big, clean hocks and thighs; and do not care to dwell too much over an accidental blemish, or even a fired fore-leg, so that the leg itself is of the right shape and calibre. Above all, do not mistake mere beef for power, and in the thorough-bred horse, over all others, go for wire, muscle, and breeding, in preference to what may look like more substantial qualities. In this respect some of the authorities of the show-yard, who are called upon to decide over sheep, pigs, chaff-cutters, *and* hunter-stallions, still require a little tutoring. In the "what to avoid" we must guard against soft, flashy strains of blood that are of no value beyond the T.Y.C., and hereditary infirmities of all kinds. Bad eyes, bad wind, bad hocks, and suspicious ring-bone-looking fetlocks are all very bad things in a stallion, the more especially if you can trace them. A horse may be blind from accident or ill-treatment, and one of our most eminent veterinarians has assured me that he did not think there were half a dozen stallions in England that were not roarers. The injudicious manner, however, in which

many stud-horses are still kept, what with high feeding, hot stabling, and little exercise, might account alike for diseases of the eye and the respiratory organs. Still, beyond what you may deduce from actual appearances, it is always as well to look back a little into the genealogy of the thorough-bred horse. Some lines, for instance, are notorious for the noise they make in the world. Humphrey Clinker, the sire of the famous Melbourne, was a bad roarer, as was Melbourne himself, and as are many of his sons and grandsons. Another celebrated Newmarket horse was known to get all his stock with a tendency to ringbone, and weak hocks give way so soon as you try them. There are clearly-admitted exceptions: a stone-blind stallion will get animals remarkable for good eyes, and a thick-winded horse may not reproduce this in his progeny; but, as a maxim, wind, eyes, and hocks should be the three essentials of anything *sound* enough to breed from, be it either sire or dam. I would not so much declare for a big horse as against a fair-sized one; and the saying of a good big horse being better than a good little one is not quite such a truism as it sounds to be. Fifteen two or fifteen three, with bone and substance, is big enough for anything; and when we come to bear in mind the sort of mares such a horse is to be put on, it is perhaps preferable to anything higher. For my own part, I go very much with the Cline theory, which says, "It has generally been supposed that the breed of animals is improved by the largest males. This opinion has done considerable mischief, and would have done more injury if it had not been counteracted by the desire of selecting animals of the best form and proportions, which are rarely to be met with in those of the largest size. Experience has proved that crossing has only succeeded in an eminent degree in those instances in which the females were larger in the usual proportion of females to males, and that it has generally failed where the males were disproportionately large. When the male is much larger than the female the offspring is generally of an imperfect form." It must be some such opinion as this which causes that rare sportsman, the venerable Sir Tatton Sykes,* to breed from none but small or moderate-sized sires; and I believe that the cross of the Exmoor pony with the thorough-bred horse would be yet more successful were the latter only more proportionate to the size of the mares. It would be pleasant to hear that Lord Exeter had lent handsome little Midas to his old neighbour of former days for a season or

* Sir Tatton Sykes has died since this article was written.—Ed.

two, when we might expect to see in the produce some of the most perfect hacks ever backed. Not the hideous, vulgar, heavy-shouldered, loaded neck, Prince Regent kind of cob, but a little pattern of beauty and strength, with style, substance, and action really fit to carry a king. Such a hack as this would soon outplace even the Prickwillows and Phenomena, already going out of use for the saddle, now that men travel to meet hounds in first-class carriages, and the feats of Dick Turpin and "The Squire" are fast becoming mere matters of hearsay. Like the modern hunter, the modern hack must be well bred, and the Council have done right to couple the two in the requirements of their stud-horse. If a country breeder wishes to ascertain for himself the description of riding horse that is likely to make the most money, I would recommend him to stroll into Rotten Row, between one and two, during the approaching season, where he will find here again how "blood will tell," and what Mr. Rice and Mr. Quartermaine have to go in search of.

Will the man who means to do better, and give nag-breeding a fair trial, be good enough to bear in mind that much of all I have said as to the sire applies equally to the dam? Let there be some shape and make, with health and action, and the same warranty as to wind, eyes, and hocks. With rarely any pedigree to fall back upon, appearance and soundness must be the chief recommendation of the farmer's mare; and even such a verdict, based upon such conclusions, must not be too hastily arrived at. Many a comparatively mean-looking one has before now thrown the best of stock, as that peerage of their order, the *Stud-book*, would assure us; mares that need carefully looking into before they are condemned or passed over. To give an illustration, however, direct to our purpose: about the grandest cock-tails I ever saw were Mr. Foster's Combat, Challenger, and Nikè, all capital runners at welter-weights, and all the children or grand-children of, I am assured, as common-looking an animal as could be. The old mare had, no doubt, much within her "that passeth show," brought out as this was by the cross to the thorough-bred horse. In fact, if the dam be but clear of hereditary unsoundness, and with good action, I do not think we should be too scrupulous in asking the tenant to send nothing but the great, fine slashing mares, which they would, as half-bred, be scarcely justified in buying up. A friend in Devonshire has sent me a few lines on the way in which the "pack-horse" answered to the superior cross, that I must give here as especially in place in a West of England journal:

"The true pack-horse is extinct, and has been ever since my horse-recollection—that is, for about the last twenty years. The animals then going, in 1840, called 'pack,' were out of pack-mares, but their sires had crosses of blood or Yorkshire. Old Gainsborough, the thorough-bred of household notoriety in Devonshire, one who flourished somewhere about 1830, is generally credited with *never having got a bad one*. I attribute this to his being the first cross with the true old pack-mares; and I believe that any moderately good thorough-bred would have produced a similar result, could he have had a chance with the same sort of mares. The animals resulting from Gainsborough and these pack-mares—and I have several in my mind's eye—were perfection in make, shape, and action, weight-carriers, everlasting, perhaps scarcely speedy enough for the present fashion of spurting across the grass countries, although safe to shine through a severe thing, and be in at the finish. This Gainsborough generation of riding horses has also gone, and *no young Gainsborough cocktail stallion ever got a good horse*. It is a public misfortune that the line of the old pack-horse has not been continued in a pure stock, both for his own excellent inherent qualities, and for the value of the first cross with the thorough-bred. The big half-bred mares of this cross put again to a good sound thorough-bred sire produced the animals to go the pace and carry the weight brilliantly in any country, and this is my pet process for a breeding line."

Of late years the West Country farmers appear to have been crossing and re-crossing out of all rhyme and reason, until they have nothing left but the horse of all work, which, as was amusingly demonstrated at Truro, they hardly knew how to class, either as a riding horse or a common draught horse. However, as my friend adds, "every Devon farmer, as a rule, breeds or tries to breed riding stock, and, as a consequence, in some hole-and-corner holdings a stylish promising nag colt is often dropped upon where a stranger would think it about as likely to find an elephant."

So much for a fitting foundation. But let the thorough-bred stallion, under the countenance of the Hunt, be ever so well adapted for his purpose, and the mare really worthy of his caresses, the business of breeding is yet only in the beginning. Better-bred stock require better treatment, and pay better for it. Half a horse's goodness, as it is said, goes in at his mouth; and it will be idle for farmers to attempt rearing riding-horses without they do them a deal better than, as a rule, they have hitherto done. A half-starved foal never

forgets it; and from the day he is dropped he must be the object of some care and attention. Does the dam give a good supply of milk? Does the young thing look as if he was doing well? Let his feet be looked to, as he grows on; and, above all, let him be well kept, have a fair supply of corn, comfortable sheltered quarters, and so forth. I am no advocate for over-coddling, nor would I wish to see the hunting-colt brought on as if his mission was to win the Derby; but liberal rations, kindly treatment, and gentle handling will all tell by the time he is first led into the show-ring, or delivered over to the breaker. I confess to having some dread of that same country breaker, with all his wonderful paraphernalia, and apparently indispensable habit of hanging about public-houses, as a means for making young horses handy. No man needs more watching; and, as I have just intimated, a vast deal may be done towards making the young one temperate before ever he reaches this trying stage in his career.

The horse is by nature a social animal; and, especially after weaning, two or three of the foals will do better in company, due care being taken that any one of them does not become too much of "the master-pig," and get all the good things for himself—to correct which they should be separated at feeding-time. When together, they will challenge each other to "strike out" a bit; whereas the solitary mopes about with but little incentive to try his paces, and is much like a boy brought up at his mother's apron-string, or a young fox-hound that has lost his friends. I should hope by this that a duly-qualified veterinary surgeon is within hail of most farmers, and I would leave it to this gentleman to throw his eye occasionally over the little stud, arrange the proper period for castration, and other such detail that will necessarily have to be adapted to time and place. On any such minutiæ of the matter it is not within my purpose here to enter, even if it would be profitable to do so. This paper rather professes to deal with the great principles of breeding riding-horses, and in seeing these carried out with a little more heart and judgment than they generally have been.

One word more for the veterinarian. Nothing can be more wholesome than the regulation which, after considerable discussion and division, the Council of the Royal Agricultural Society are still able to insist upon as part of their proceedings—viz., that every horse entered for exhibition shall be examined and passed by a duly-appointed veterinary surgeon previous to his facing the judges. It is true that the latter should and might be able to reject an unsound animal with-

out such assistance; but their edict would not carry the same weight, especially with the disappointed owner of a disqualified horse, as the professional opinion of the College-man. It is scarcely fair, in fact, to place gentlemen who give their services to the Society in so invidious a position—one that often renders them liable to much gratuitous abuse. I would not, however, have the veterinary inspector of the meeting in any way interfere or intrude upon the judges when at work. His duty is to see that none but sound horses go before them, and there to limit his responsibility. Sometimes it will happen that the judge will associate the two offices in his own proper person; but as a rule it is better that the Society should appoint its own veterinary surgeon; and I would recommend that this course be adopted on the inauguration of the thoroughbred premium at Exeter. Of course, such an examination should not be confined to the stallions, but extended to every class of horses in the entry. It is somewhat significant to reflect how resolutely this plan has been resisted in certain quarters, and by certain exhibitors, not merely at the meetings of the Royal Agricultural Society. I know at this moment of a county show of some repute where the presence of the veterinary inspector has been for years successfully tabooed, until the number of unsound animals exhibited has justly come to create some alarm for the character of the breed. I am speaking here rather of cart-horses than riding-stock, while I am glad to see that a leading member of the direction has put himself to reform this too-flattering fashion of making up a show, and that a preliminary veterinary examination will henceforth be embodied in the rules and regulations.

It is very clear that within the last few years the proper stimulus has been given for breeding a better description of "nag-horse," and I am sanguine of still-continued improvement in this way. I have seen most of the famous horse-shows, and had the pleasure of being present at that grand meeting at Middlesborough, where the first hundred ever offered was won by Lord Zetland's celebrated Voltigeur; from the great success of which occasion the national association, but two years since, was induced to institute a similar premium. The Bath and West of England Society is now promptly following in the same course, and with every prospect of this very agreeable feature in the business of the farm being more systematically developed, with proportionate advantage to the breeder and credit to the country.

THE "HORSE SICKNESS" OF THE CAPE OF GOOD HOPE.

By T. Paton, V.S., C.M.R.

To the Editor of the Fort Beaufort Advocate.

Sir,—In again introducing the subject of "Horse sickness," for the consideration of your readers, let me remind them that the malady ordinarily known by this meaningless term, is, after all, no new disease, but merely a form of pleurisy mixed up with bronchitis. The appearance of a foaming froth from the nostrils after death, seems to be the grand symptom which everybody recognises as an unfailing and distinctive criterion of the nature of the sickness. On a careful digest of the notes taken of a large number of those cases of which I have made *post-mortem* examinations, there appears to me to be only one way of preventing the frequency of the cases, viz., by careful stabling and feeding, and a proper regulation of the work to be exacted.

The nature of the disease has already been adverted to, but it may be as well to enter more fully into the matter. It is, at the outset, incipient pleurisy, with slight effusion into the chest; the pleura of the lungs becomes thickened, and seems to arrest the exit of serum in that direction, the inflammatory action, unrelieved by bleeding (for I believe bleeding would be beneficial if carried out in time) goes on, and the serum, or lymphy exudation extends through the interlobular substance of the lungs, under the membrane lining the bronchial tubes and trachea, and finally through it into the air tubes, where a portion of it is mixed with the air taken in at each succeeding inspiration, giving rise to an accumulation of froth in them, until the air-passages are no longer capable of admitting the air necessary to the purification of the circulating blood. These facts, taken in conjunction with the heart's cavities being filled with dark and impure blood, prove death to have arisen from suffocation. These appearances are mostly seen without the least trace of structural change in the substance of the lungs. The causes are various, the most prominent of all being *exposure to wet and cold* succeeding upon long-continued dry weather; over exertion from protracted riding or driving; allowing the animal to cool *rapidly* after perspiring freely; sudden chill from drinking cold water, thus driving the blood from the surface of the body upon the internal organs; in addition to

these may be added, hereditary constitutional causes and rapid atmospheric changes.

The symptoms are differently described by different individuals, according to the circumstances under which they have presented themselves to notice. So far as my experience and that of intelligent communicators has gone, they are simply these :—In the very commencement, a horse formerly of the most lively temperament, appears languid and dull, hangs his head, separates himself from his companions, remains standing, or seeks the homestead; perhaps he has been seen to be shivering violently, there is great distress of the breathing, high fever, small thready pulse, and a rubbing sound on applying the ear to the chest; the horse stands up persistently; if on a journey the willing servant, who has ever cheerfully responded to the voice of his rider, seems dull and heavy, and requires more than humane persuasion to induce him to proceed on his journey; or he may not have shown the least indisposition to within a few hours of his death, in which case he has been the subject of chronic or long-standing pleurisy with effusion, and in these cases the frothy foamy discharge from the nostrils is always more abundant than in the more recent cases. The treatment must be adapted to the stage in which the disease is attacked. If it is discovered early, bleeding fearlessly until the animal fairly gives way and faints under the abstraction, is of the greatest use; the bleeding will be borne well if it is judicious, if injudicious, nature will speak out loudly enough, as the animal will then sink under the abstraction of a small quantity of the vital fluid. Protection from the weather by bringing into the stable, covering up with a blanket, bandaging the legs, dieting on bran mashes, and the early administration of enemata of soap dissolved in warm water—introducing the following powder in the mouth every two hours for three days in succession—

Calomel, gr. x,
Powdered Opium, gr. v. Mix.

—giving a full allowance of tepid water, with a handful of meal in each bucket. If, however, there should be any weakness shown by staggering gait, extreme fever, short painful cough, or discharge from the nostrils of a muco-purulent, rusty, dry or frothy character, then bleeding is utterly inadmissible, the period has gone past Here the same protecting measures should be taken,—steaming the nostrils, mustard to the chest, hot bran mashes fresh and sweet, a bucket of oatmeal gruel, and carefully selected forage may be

offered—enemata of tepid water in which soap has been rubbed down at frequent intervals, and general nursing and restorative measures should be resorted to. These remarks may be generalised upon to a much further extent, but I will content myself by adding a few more observations which may be the means of eliciting some valuable information on this subject from some of the district farmers who may have become familiar with the disease. For my own part, I have never had the good fortune to meet with any two persons whose statements of the nature of the disease exactly corresponded, showing that they have been considering different phases of the disease, if not essentially different forms of lung disease. Of one thing there is no doubt, and that is, that there are seasons (usually *wet* ones) succeeding drought, in which great mortality occurs among horses at the fall of the year; it is true that there is an ordinary mortality *every* fall, but its intensity is considerably heightened by the influences originating in drought. Thus horses that have been reduced to a state of inanition from the scarcity of grass, having from the abundance of the same after wet recovered their flesh but not their tonicity, have had their systems stimulated and rendered liable to inflammatory diseases, are exposed to cold wet nights. Is it then to be wondered at that the animal which yesterday revelled and gambolled in high spirits on his now plentiful supply of herbage, should after such exposure be seized with shivering and oppressed breathing,—only discovered when he has separated himself from the herd, perhaps making for the homestead,—and as lung affections commonly do, terminating fatally in a few hours?

There is not perhaps (with the exception of Australia) a country in the world where horses are so mismanaged or badly cared for as at the Cape—and no part of the globe has acquired such an unenviable notoriety for equine mortality,—where the "horse sickness" is made the scapegoat for nearly all the ills horse flesh is heir to. The long journeys performed by grass horses, such distances as 70 or 100, and even more miles in the day, are fruitful sources of lung disease, and men who talk of having travelled so far in a day, and tell you calmly that it must be "something singular" that their horses should fall sick after a short journey of thirty or forty miles, are not likely people to enlighten one on the subject of the diseases of the respiratory organs. It is said that horses properly stabled (which doubtless means they are taken care of) never fall victims to this disease. No doubt the cases are very rare and exceptional; but I am convinced that stabled horses do die of it, and there is no reason

why they should not do so occasionally, as they are at times exposed to the very influences which determine its production, such as prolonged journeys, travelling at night, chills, &c. There are those also who believe that the "sickness" depends on a cobwebby appearance of the grass, and that if precaution is observed by keeping the horses in the stable in the morning until the sun has dispersed this appearance of the dewy grass, and bringing them in before the dew falls at night, that the losses are much diminished, if not altogether prevented, losing sight of the fact that they are thereby protecting their animals from prolonged exposure to the cold night air, wet, &c.; and further, keeping the *wet* influence in view (too much stress cannot be laid on this point) in connection with cold, as being the co-operative powers in the production of this peculiar pleurisy, protection by means of good sheds or stables must be insisted upon as the surest preventative means at our disposal. The accession of frost too is looked to with hopefulness, as bringing with it an almost certain check to the advances of this "destroyer." As frost implies an atmosphere comparatively deprived of moisture, and as a sign of the termination of the wet season, we may fairly trace back the source of horse sickness to the formerly prevailing rains and succeeding heavy night dews, in which weather also we may find a mechanical reason for the proclivity of horses to lung affections; as if a horse is out all night, he will eat all night of the young wet grass, with which he gorges himself, the mere mechanical distention of his stomach and bowels from the pressure on the diaphragm (the muscular partition separating the chest from the abdomen) causing at times an oppression of the breathing apparatus, which if unrelieved must produce fatal effects, from the non-escape of gases arising from arrested digestion of the extra quantity of grass. Thus those people who keep their horses in at night, avoid two evils of great importance; as in plentiful times a horse can eat between sunrise and sunset much more than he can obtain in twice the time when the herbage is scanty from drought. That the "horse sickness" is coeval with wet seasons succeeding drought, is unquestionably proved by reference to the mortality experienced during the years 1837, 1854, and 1863, and in reasoning from cause to effect, no other conclusion can be arrived at. With regard to locality, the mountains were said to possess an immunity until this season, when it has been equally fatal there as in the plains. No doubt marshy places, low ground, and the vicinity of rivers, are all favorable to the development of the disease, as may be understood from the misty vapours

and fogs arising from such localities. In the western districts it was customary for the horse breeders to trek from the plains to the mountains, or from the mountains to the seaboard, and the results, as may be imagined, were most disastrous, being on the principle of a man trying to walk off an attack of inflammation of the lungs, which was the very thing these misguided people were trying to do. Their object doubtless was a change of air and feeding, and had they carried the animals to the change, good might have resulted. I have had the misfortune to witness examples of men with diseased lungs voluntarily undergoing the most desperate bodily exercise with a view of gaining strength, the consequence being, that their end, instead of being retarded, was accelerated, and they fell victims to their indiscretion earlier than they otherwise might have done; so in the case of the western province breeders trekking their animals with affected lungs it could not but be attended with untoward results. Again, an epizootic, such as is now prevalent among horses of all sexes, ages, and condition, stabled or unstabled, breaks out, and horses are attacked *everywhere,* for it resides in the atmosphere, which carries its infinitesimal poisonous influence into the circulating fluid of such animals as from causes unknown may come within the scope of its power; and if this peculiar horse sickness should come in the epizootic form, then as an old native non-commissioned officer observed to me, "you might shut a horse up in the cells and it would find him out." However the views embodied in the foregoing remarks may correspond or differ with the experience of some of your readers, let me assure them that I have only one object at heart in this matter; and that is, to raise the veil of obscurity which hangs over and bewilders people with respect to the nature, &c., of this so-called peculiar disease,—peculiar only, I believe, because confounded with other diseases of the lungs which closely resemble one another in some of their phenomena, but which require to be thoroughly understood and dissociated before a proper and judicious treatment of them can be set forth.

It is to be recommended that farmers, horse-breeders, and others interested, should themselves carefully and diligently inquire into the subject of diseases among their stock, by reference to good standard works on the treatment of horses, cattle, sheep, &c., such as those published in the 'Farmer's Library,' 'Blaine on the Horse,' 'Youatt on Cattle,' and a host of others; by making *post-mortem* examinations, and comparing them with the symptoms of disease, and the

employment of their own common sense, instead of allowing themselves to be gulled by quacks and quack remedies, which only tend to arrest the march of intelligence in the science of treating cattle and their diseases.

It has been my endeavour to show that "horse sickness," so called, is only one of the forms of lung disease, or perhaps of the air-passages more particularly, arising from the combined or separate influences of drought, exposure to cold and wet nights, or from an empoisoned condition of the blood of life, arising from atmospheric influence, over which I am bound to say the power of man is as limited as his knowledge of the phenomena,—the results are all we see, and we must be guided by our own reason in protecting our animals from exposure, in providing a sufficient supply of proper food, at the same time guarding against excess, which is even more fatal than scarcity. Where these diseases follow the action of debilitating influences, so the treatment, founded upon and to combat weakness, must necessarily be of an invigorating and restorative character, depletion by bleeding or otherwise being inadmissible, active stimulants also are to be avoided. Nursing, counter irritation, steaming the nostrils, enemata, mashes, gruel, clothing the body, and perfect quiet, are all measures essential to the comfort and safety of the patient. On the other hand, if the affection can be assailed in its early stage, then active depletion by bleeding will be tolerated largely, which will be known by the horse standing the abstraction well, if the bleeding is judicious in point of time; if not, the animal will soon give intimation by taking a deep inspiration, or sighing, an evidence that is unmistakable either that the bleeding has been pushed far enough, or that the time for it has gone past. Further treatment has been detailed in the body of this letter. Apologising for the unexpected length of my communication, which I can only attribute to a desire to make myself understood,

I am, Sir, yours, &c.

Endosmosis operates in its results on the human body by a combined electrical and vital agency, and a healthy electrical condition of the skin is amongst its most important properties.

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Clinique Vétérinaire, January, 1863.

ORIGIN OF COWPOX.

(*Continued from p.* 304.)

M. Reynault.—One of the members of great authority in this assembly, M. Depaul, who has made the question of vaccine his study, has given an opinion during this discussion which, with all deference to him, I believe is not well founded. M. Depaul, in his dissertation, has sought to establish—1st. That the malady called grease in the horse does not communicate the vaccine disease either to man or the cow. 2nd. That this communication is not established by clinical facts or by direct experiments from inoculation. 3rd. That the horse is affected by a form of variola transmissible to man and animals. 4th. That variola and vaccine are two identical maladies, vaccine being nothing more than variola inoculated into other animals. Such are, if I do not mistake, the views that M. Depaul has maintained in the Academy at its last two sittings, and these I desire to examine *seriatim*, therefore I beg the Academy to grant me a few moments' indulgence. Everybody knows that Mr. Jenner never prevaricated on the origin of the vaccine; he assigned it to a malady of the horse called grease, which he also designates as sore heels, and which his translator has rendered by the word *javart*. This opinion of Jenner, we know, has been much contested. For a long time it was not even received, except with doubt and incredulity. However, Jenner persisted in his first opinion in relation to the origin of the cowpox, and it is to grease, or sore heels, that he ascribes the principal source of vaccine. The reading of his *Opuscule* and correspondence, as has been shown by M. H. Bouley, leaves no doubt on the mind in this respect. Jenner candidly acknowledges that he had made no direct inoculations with the matter of grease, but he adds that his numerous observations have demonstrated this to be the source in a most evident and satisfactory manner. What Jenner has not done, viz., directly transmitted the matter of grease to

the cow, has been, however, done by others, his contemporaries, or by the continuators of his works, and thus it has been experimentally demonstrated. As far as I am concerned, I have in vain attempted to inoculate the cow with the secretion from grease. But in spite of this want of success, I do not consider myself authorised to doubt or deny the successful results obtained by many other experimenters. In fact, when one has read without prejudice the experience of Loy, Carro, Viborg, Coleman, Kalbert, Steinbeck, Grève, Rosendalh, and Hertwig, one must be convinced that the matter of grease, under certain conditions, causes the development in man, as well as in the cow, of pustules similar to those of vaccine. I must be permitted to add that it would be manifesting oneself as too severe not to admit the fact because it happens to be incomplete on some points, since at this rate there would be very few pathological questions solved if the observations on which they are grounded were scrutinised with the same spirit of doubt, prejudice, and rigor, which has been brought to bear on the examination relative to the fact of the transmission of the virus of grease. I am aware that the adversaries to this opinion pretend that there is no proof that the authors whom I have cited have inoculated with the matter of grease. Sometimes, they add, it is a slight malady of the skin—*javart cutané*, cracked heels, erythema,—which gave rise to the vaccine disease, either in the human subject or the cow. I will hereafter examine the value of this argument. I here confine myself to the declaration that it is not to be admitted that Viborg, Coleman, and the veterinary practitioners who have seen many of the horses that transmitted the vaccine disease, were not able to distinguish that designated grease from other maladies of the skin.* Before demonstrating that there is no mistake, the Academy will permit me to recapitulate in a few words the characters of grease from their *début*. This seems to me the more necessary because several authors who have written on vaccine seem to have ignored the fundamental symptoms which distinguish this affection. In veterinary medicine we find several maladies which, in their course, take on such different forms, that by a superficial examination they might be taken for distinct affections. What is more different than strangles which assumes the regular form, and those affections that appear with erup-

* Why not? M. Renault has admitted that M. Lafosse might have committed an error in the diagnosis under a similar circumstance, and one will see further on the confusion of Viborg between vesicles and pustules.—U. L.

tions on the face and elsewhere? Grease presents to us the same peculiarities. This affection takes on successively the characters which belong to the third epoch, and thus it seems to constitute a different malady from what it was at the beginning. What is more different than the malady of the horse known by the name of anasarca, when we compare the first and third periods? What I advance is so true that, if by long clinical habit we have not been taught to follow all the variations of the symptoms from the beginning to the end of a disease, we find ourselves liable to be deceived in respect to the nature of the malady. At the *début*, grease is ushered in with swelling of the legs, particularly about the bend of the fetlock; this swelling rapidly extends upwards to the knee or hock; it is preceded by and accompanied with febrile symptoms; the swollen parts are hot and painful, and become in a short time the seat of an exudation of a serous nature, which renders the hair humid; this serous discharge is sometimes so abundant that it runs out in small drops down the hoofs; the skin becomes covered with vesicles of variable size, containing clear, yellowish fluid, by which they are distended, they exhale a strong, penetrating odour, and are succeeded by places denuded of hair, which are more or less deep seated, and from which exudes a more abundant and thicker secretion than from the vesicles situated here and there;* in the bend of the fetlock there are pustules, sometimes large in size, formed by a soft and easily compressible tissue; these secrete in succession a liquid, at first serous and of a yellowish hue, afterwards it becomes grayish and more consistent; the interval spaces which separate these pustules are filled with coagulated matter, resembling gelatine; the hair is bristling and matted together, in some places in the shape of small fascias. In the course of this period it is not rare to see the appearance of cracks and exfoliation of the skin, partially gangrenous. But an important phenomenon to notice, and which proves that the pathological alterations in question are in the local expression of a general morbid state, is that the febrile symptoms diminish or disappear as soon as the malady localizes itself in the lower part of the legs. It is principally among young horses that acute grease prevails. I have observed it particularly in those in which the development of strangles has been arrested. In 1840 several horses imported into France by the east frontier, for the remount of the cavalry, were attacked by this

* According to M. Reynault, M. Lafosse would have been right in qualifying the malady of Riennes as grease if, as he asserts, grease is a pustulous malady.—U. L.

malady. To avoid the sanitary measures established in the German states, the dealers were obliged to make these horses travel great distances in the wet and snow during the breaking up of the frost. This variety of grease is frequent on the other side of the Rhine. Several veterinary practitioners, amongst whom I will cite MM. Hertwig, Spinola, and Fulke, have well described it. The form of the malady,—grease with cracks, — they have designated by the term *schündemaüke ;* when gangrenous, *braudmaüke*. As it is very important to establish that the malady of which I have spoken resembles that described by the German veterinary practitioners, I beg the Academy to allow me to give some textual extracts from their works. Professor Fulke, of the University of Jena, assigns to this malady of the horse's legs the following characters :—It attacks by a slight fever and tumefaction of the intermaxillary glands ; the region of the pastern is tumefied, hot, and painful ; in horses with white legs a redness of an erysepilatous character is seen ; the horse frequently raises his feet, manifesting pain ; there is also more or less lameness. From the third to the fourth day vesicles appear on the pastern and round the coronet ; these vesicles contain a watery lymph, of a peculiar odour, which agglutinates the hairs ; it often happens that these vesicles burst soon after their formation, and in such a manner that it appears as if the lymph exuded from the skin. Towards the fifteenth or eighteenth day the morbid secretion stops, the exudation ceases, and all returns to the normal state. When, however, the horse has been neglected, the malady becomes chronic. Hertwig, Professor of the Veterinary School of Berlin, gives the following description of grease :—At its *début* there is slight febrile reaction ; one or more of the legs become swollen about the fetlock ; the parts are hot and painful ; the swelling gradually extends upwards ; there is lameness ; the hair bristles ; vesicles are formed, which burst soon after their formation, and in their place there appear red, fleshy elevations, from which a yellow, viscous liquid exudes, of a particular odour. After a short time, from ten to fifteen days, the denuded surfaces become covered with brown scabs, under which healthy cicatrizations are formed, or else they are transformed into ulcers, which secrete an offensive fluid mixed with blood, exhaling a bad odour. Hertwig also concurs as to the cracks and the partial sloughing of the skin, consequent on gangrene. Spinola, in his 'Veterinary Pathology,' treats lengthily of grease ; and in respect to the intensity of the symptoms makes the division of it benign and malignant. It is in the description given by this author

that we find the great modification this malady undergoes relative to the expression of the symptoms from the simple serous exudation to the alterations of the subjacent tissue. He designates the cracks *Javart*, and sphacelus he considers as an intermediate morbid state. Horses of German origin are very subject to grease, but the malady is of rarer occurrence now than formerly. The extension and good state of the roads, the improvement in the breed of horses and also in their alimentation, and the conveying dealers' horses by railway instead of by the road, explain the rarity of grease at the present time. For these reasons we now but seldom meet with the tumefaction of the legs, and the serous exudation, followed by deep cracks, &c., which were once observed on nearly all the horses newly imported. From the foregoing extracts it will be seen that grease presents itself at first with a tumefaction of the lower parts of the legs, preceded and accompanied by febrile reaction, and then the eruption of vesicles and pustules, and the secretion of an abundant yellow serum. In the after researches on grease in relation to vaccine, it will be important to find out whether it takes on the pustulous form. On this point I must insist, and my communication has no other object than to call the attention of medical men and veterinary practitioners to this form of grease. In proportion to the length of time from the invasion, the skin of the legs is greatly modified; it thickens, cracks, ulcerates, and often becomes the seat of a multitude of reddish warty excrescences of a mammilated form. One who has not watched the progress of the symptoms, and the lesions to which horses' legs are subject, from the beginning, has great difficulty in comprehending the different forms that grease ultimately takes on from that which characterises its *début*. From this error in observing the malady arises, in my opinion, the confusion and the controversy respecting the malady of the horse that engenders vaccine. I have always been of opinion, and I am still more so now after having heard the original text of Jenner, that *grease and sore heels* of that author correspond to the first period, that is the eruptive, vesiculous, and pustulous, of the *eaux aux jambes* which I have described. I admit the same opinion in respect to the gangrenous malady, observed by Hertwig, of which M. Bouley has given you an extract, and of that which has been by some designated *Javart*, the cracks, the sloughing of the skin, the divers exfoliations which constitute the pathological alterations that in veterinary language are designated by this last name, are, according to my sense of it, only different morbid states in

their manifestations, but the same as to their first origin. It is said, and with reason, that a confusion in words causes a confusion in things. It is a well-known fact, that the different names given to the malady of the horse, which, according to Jenner, transmits the vaccine, have been one of the principal causes of the differences that have prevailed, and still prevail, in science in relation to the origin of vaccine. Jenner thought himself more authorised in employing the word sore heels, inasmuch as it is generally in use in England, as may be seen in the works of a contemporary veterinary writer of Jenner—Delabere-Blaine. The word *Javart* is the one which has certainly the most contributed to complicate the history of the origin of vaccine. M. Bouley has told you that the word *Javart* was not in the text of Jenner; but what he has not told you is, that the translator himself has recognised the error he has made in rendering grease by *Javart*. He confessed, in 1803, that he had, perhaps, too lightly believed that the word *Javart* of the French was the malady of Jenner. This error, I repeat, has contributed much to propagate the doubts and incredulity relative to the origin Jenner gave to vaccine. I have said above that there were clinical facts in the annals of science, and also several experiments, which have established the position that the matter of grease in the horse when inoculated has produced the vaccine disease in the human subject and in the cow. I will not here recall the text, which would be too long, but will confine myself to citing the experiments of Viborg and Coleman, which were made soon after the discovery of vaccine; after which I will acquaint you with those which have been attempted within the last few years in Germany. This is how Viborg expresses himself: "I have informed the Society that at different times I repeated the experiments of Loy and Sacco without being able to confirm them, and I came to the supposition that the cause of the difference was from not having taken the matter of grease which I employed at the same period of the malady. The grease gives off at first a limpid serosity, which, at a more advanced period, becomes mixed with pus. It is this last matter that I employed. I resolved to try the matter of the first period, but from the unfrequent occurrence of the malady I only met with one case in which the disease had not yet passed this phase, and that was last spring. I found the skin in the bend of the fetlock covered with red granulated eminences, from which exuded a serous liquid of a peculiar odour. The horse presented besides a slight fever and loss of appetite. I inocu-

lated this liquid into a young cow which had calved six weeks before. It was inserted immediately as it was taken from the horse into the skin of the teats of the cow. From the fifth to the sixth day there appeared transparent vesicles, not only on the place of the punctures, but also on other parts of the teats and the udder. The seventh, eighth, and ninth days these were encircled by a red margin (*auréole*) characteristic of the true pustules. Each vesicle was divided into cells containing a limpid serosity, depressed in the centre, and forming a scab like the true cow-pox. From the fifth to the seventh day the cow presented a slight accession of fever, and a diminution of the secretion of milk. Finding thus that not only the observations of Loy and Sacco were well founded, but also the popular tradition in England and in Holstein that cows are attacked by the vaccine when grease prevailed epizootically amongst horses, it seemed to me useless to multiply these experiments." Here are the experiments of Mr. Coleman, as they are given in the 'Bibliothèque Britanique.' "Coleman has finally succeeded in inoculating a cow with the matter of the grease; which inoculation has produced an ulcer on the udder. With the virus taken from this ulcer a child was inoculated, which has produced well-characterised vaccine." For the last twenty years there are numerous examples of vaccine produced either accidentally or experimentally by the direct transmission of the matter of grease to man and the cow. Steinbeck has successfully inoculated the matter of grease, first, in the cow, and secondly, in children. These experiments he has repeated both in the cow and in children. The results according to Steinbeck, from these experiments is, that the matter of grease transmitted to man or to the cow, possesses the property of producing pustules similar to those of true vaccine, and that the direct transmission to man excites in him a febrile reaction, stronger than that of the vaccine; that this is modified by passing the equine virus through the organism of the cow. Professor Ritter, of Riehl, met with an individual in 1830 affected in the hands with exanthema taken from a horse that was attacked with grease, and which had the closest analogy with vaccine. Ritter inoculated two children with the matter of this exanthema, and in them were developed pustules that transmitted the disease to other children. No counter-experiments were made. Berndt, Professor of the University of Greifswald, visited the groom who had pustules on his hands, which he had caught from attending a horse with greasy heels. With the matter taken from these pustules, several children were inoculated, which

produced the true vaccinal exanthema. Several of those inoculated were submitted to the counter-vaccinal tests, but these proved negative. This was also the case with those who had had the smallpox. The groom had not been vaccinated, nor had he had the smallpox. Kahlert, Professor at Prague, met with two Bohemian horses affected with grease (*Javart au paturon*). Two young cows were inoculated with the matter from them, by which vaccinal pustules were produced. With the matter of these, three children were inoculated, the result of which was most favorable, and the transmission from arm to arm has never failed.

(*To be continued.*)

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JULY 15, 1863.

PRESENT: — The President, Professors Simonds and Varnell, Messrs. Broad, Ellis, Gardiner, Harpley, Harrison, Jex, Mavor, Moon, Robinson, Secker, Wilkinson, Withers, and the Secretary.

The PRESIDENT, W. Ernes, Esq., in the Chair.

The minutes of the preceding meeting were read and confirmed.

A letter in reply to the address of congratulation to Her Majesty was then read.

It was moved by *Mr. Wilkinson*, and seconded by *Mr. Harpley*—

"That the letter now read from the Secretary of State be entered on the minutes."—Carried.

Communications were read from the several gentlemen accepting the office of Vice-Presidents, to which they had been elected at a former meeting of the Council.

A letter was also submitted from Dr. Struthers relative to the number of candidates to be examined on each evening at the sitting of the Board of Examiners in Scotland, stating that they had examined sixteen, and the English Board twelve.

It was moved by *Mr. Wilkinson*, and seconded by *Mr. Secker*—

"That the Secretary inform Dr. Struthers that the usual

number examined each evening was twelve; but on the concluding day of the meeting of the Court of Examiners an additional number have been occasionally examined."—Carried.

The Registrar's report announced the death of Mr. William Bunnell, Liverpool; also that fifty-five members have been admitted from the Royal Veterinary College, London, and thirty-five from the Veterinary Colleges, Edinburgh. The names of the members admitted were read, those who were rejected, and also the names of the examiners and *ex-officio* members who were present.

The Inquiry Committee brought up their report, which was submitted. The Committee recommends—

"That a Bill for the better regulation of the practice of Veterinary Surgeons throughout the United Kingdom be prepared for the approval of the Council, with a view to its being introduced into Parliament, and also that a petition embodying the principles of the Bill be presented to the House at the next session; and that a Special Committee be appointed to carry out the above recommendation."

It was moved by *Mr. Wilkinson,* and seconded by *Mr. Robinson*—

"That a vote of thanks be given to the Chairman and Committee for their exertions."—Carried.

Professor Simonds then moved that the Report be received, which was seconded by *Mr. Secker*, and carried.

The Report from the Finance Committee and the Quarterly Balance Sheet of the Treasurer's account was submitted. The current expenses for the quarter amounted to £102 13*s.* 10½*d.*, which they recommend should be discharged. The Finance Committee drew the attention of the Council to the disbursements in Scotland—that vouchers had not been furnished, and that it is desirable they should be.

It was moved by *Professor Simonds*, and seconded by *Mr. Robinson*—

"That the Report and Quarterly Balance Sheet of the Treasurer's account be received and adopted."—Carried.

Cheques were ordered to be drawn for the current expenses.

The reappointment of Committees for the year was then proceeded with, viz.—

The Finance Committee, to consist of Messrs. Braby, Ellis, Harpley, Moon, Simonds, and Wilkinson.

The House Committee, to consist of Messrs. Field, Mavor, Spooner, and Withers.

The Parliamentary Committee, to consist of Messrs. Field, Gardiner, Goodwin, Harpley, Harrison, Jex, Mavor, Moon, Secker, and Varnell.

The business of the Quarterly Meeting having terminated, a SPECIAL MEETING was then convened, the same members present, to consider the Alteration of Bye-law 28. After having been proposed by *Mr. Wilkinson*, and seconded by *Mr. Secker*, the amended Bye-law, to the following effect, was carried—

"Any candidate failing to obtain his diploma after two examinations, shall pay a further fee of three guineas on each and every subsequent occasion of presenting himself before the Court of Examiners."

Mr. Robinson then called the attention of the Meeting to the proposed new Bye-law, which had reference to the section of the Court of Examiners in Scotland—the certificates not having been retained by the Secretary, and forwarded along with the remittances.

The new Bye-law was to the following effect, viz.:—

"Each candidate, seven days prior to his examination by the section of the Court of Examiners acting for Scotland, must leave with the Hon. Secretary of that Court a fee of seven guineas for such examination; together with a certificate, or other legal proof as may be required, of his having been educated at one of the recognised colleges or schools."

After having been proposed by *Mr. Robinson*, and seconded by *Mr. Secker*, was carried.

AT A SPECIAL MEETING OF COUNCIL, HELD JULY 22, 1863,

For the purpose of *confirming* the alteration of Bye-law 28, and the new Bye-law by *Mr. Robinson*.

PRESENT:—The President, Messrs. Braby, Gardiner, Harrison, Jex, Mavor, Wilkinson, Withers, and the Secretary.

The PRESIDENT in the Chair.

The minutes of the QUARTERLY and SPECIAL MEETING, at which the said Bye-laws were adopted, were read and confirmed.

The altered Bye-law, 28, and the new Bye-law, having been submitted—

It was moved by *Mr. Mavor,* and seconded by *Mr. Jex*—

"That the alteration of Bye-law 28, and the new Bye-law made at a Special Meeting of the Council held on the 15th day of July, be now duly confirmed."—Carried.

Mr. Wilkinson gave notice of motion for the alteration of Bye-law 21, which was ordered to be suspended in the Board-room for three months.

By order of the Council,
WILLIAM HENRY COATES,
Secretary.

ROYAL AGRICULTURAL COLLEGE, CIRENCESTER.

DINNER TO PROFESSORS VOELCKER, BUCKMAN, COLEMAN, AND BROWN.

ON the 14th ult. a public dinner took place at the Corn Hall, Cirencester, in honour of the above-named gentlemen, which was a very great success, and they have reason to be well satisfied with the hearty and cordial reception they met with.

The chair was taken by Thomas Crowther Brown, Esq., who was supported right and left by the guests of the evening, Dr. Voelcker, Professor Buckman, Professor Coleman, and Professor Brown. Among those present were the Rev. Thomas Maurice, Captain Abbott, Messrs. Thomas Warner, William Slatter, J. R. Smith, R. A. Anderson, Thomas Commeline, G. F. Newmarch, J. Creese, T. Vaisey, H. Zachary, — Maurice, J. Heron, D. Arkell, C. Hobbs, A. Craddock, Peter Matthews, R. A. Iles, W. Arkell, T. Skinner, T. Little, R. Newcombe, H. Fryers, T. Porter, J. Thayer, J. Mullings, Ernest Bowly, W. J. Sadler, John Lane, R. K. Habgood, E. H. Edgell, H. J. Marshall, E. Hampton, W. Hodges, G. Lane, S. K. Tombs, Thomas Bedford, jun., H. Howell (Driffield), R. Ellett, Edmund Rnck, C. Blackwell, J. Villar, G. Jones, C. Hill, J. S. Parsons, J. W. Mason, E. Baily, R. F. Darby, W. Cole, J. Plumbe, T. Lewis, John Taylor, J. Parry, J. Niblet, T. Bridges, Robert Habgood, F. Hoare, T. Boulton, W. Flux, J. Williams, Willoughby Brown, W. White, J. H. Bryan, J. M. Read, T. Cox, Raymond Allen, R. Kimber, — Hulbert, H. Frape, and a few students. Mr. James Kearsey, a member of the committee, was unable to be present, but sent a letter expressing his sympathy with the professors. Mr. Newmarch and other members of the first council were also present. It was wisely determined that the harmony of the meeting should not be disturbed by any wandering from its specific object, which was simply the payment of a mark of respect to the retiring professors.

Grace was said by the Rev. Thomas Maurice.

On the removal of the cloth, the chairman read several letters, which he had received from gentlemen who had been invited, but who from various reasons were unable to be present.

The national and other toasts having been given, and responded to, the *Chairman* said he had now reached the especial business of this convivial meeting, the healths of the gentlemen who were their guests (cheers), and whom they had invited there to-day under circumstances which were not very pleasant to their feelings, although it was not his intention, nor was it the wish of any individual, to allude to those circumstances further. The toast was connected with double feelings as it were. First, a feeling of delight, arising from the advantages which we have all received from the long residence amongst us of those gentlemen—advantages derived not merely from their qualifications in their several departments, but what was of far more importance, their willingness and earnest desire to convey to others those truths of science which they had acquired by hard study during the earlier periods of their lives (cheers). They had so long had the advantages of these gentlemen's knowledge, so freely given, that their loss was accompanied by the greatest regret at the separation, though he trusted they would not be far separated. He trusted that in other districts to which they might remove they would still convey their peculiar knowledge to others, particularly to the agricultural community. They had all their lives been in the habit of teaching theory, and though they had not engaged in practice, they had urged with the greatest force upon practical men the importance of their understanding the principles by which all sound practice is regulated (hear, hear.) For they must know very well that though they ploughed and sowed as their ancestors did, by habit and by rote, the principles connected with agriculture were some of the highest principles of nature and the God of nature. Those principles and laws had no inferior origin to God himself. The principles which these professors had been engaged in teaching were the law of God which had been revealed to man, but revealed especially to those men who had devoted themselves to acquire the knowledge. They had filled their offices so long, and in such a friendly, such an agreeable, and such a loving way, that it was our bounden duty—they being separated from us, or rather we from them—heartily to thank them for what they had done (hear, hear, and cheers). There certainly could not be two opinions about that. He was sure that every individual present would heartily thank them for the liberality and kindness with which for so long a period they had not merely conveyed their peculiar instruction to the Royal Agricultural College, but had always been ready to aid individuals and societies in acquiring the same important knowledge. Having made these general remarks, it was proposed to drink the health of the professors singly, because they were not common men who didn't know what to say or how to say it, but men who occupied a superior rank in their positions, and whom they might never have such an opportunity of hearing together as this evening. They were not met to learn, but in some little degree to carry out the teaching which these gentlemen had so long been successfully engaged in. He asked them first to drink the health of Professor Buckman (loud cheers). That gentleman was first noticed because he had been the longest resident, and was the senior professor. He had had the advantage of a personal acquaintance with him during the whole of his residence in Cirencester, and he had found that he was always ready to assist others with the peculiar information he possessed—always ready and willing to point out the advantages, the beauty and the delights of science. He had taken them into the fields and shown them the beautiful creation of God in the vegetable kingdom, and had pointed out

the structure of the earth in which they live. His geological knowledge was also great, and those who had accompanied him in his rambles would say that it was a delightful thing, and that he was just the man to infuse that knowledge into the minds of the young. He therefore proposed the health of Mr. Buckman, Professor of Botany and Geology in the Royal Agricultural College (loud cheers, with one cheer more for Mrs. Buckman).

Professor Buckman, who was received with loud cheers, said: Mr. chairman and friends, I think I might have spoken well but for that last cheer. I thank you heartily for that cheer, for it reminds me forcibly that my wife has become attached to this place, and, like me, she does not want to leave it. However, gentlemen, we must not always look at what we want ourselves. In all probability we may come to conclusions that what we want is not always proper for us; and I for one am quite ready to bow to the decrees of Providence in this matter. I have been chosen as the first to return thanks to you for this great kindness because I have been at the college a longer period than the rest of the professors—because, also, I number a few years more than they do; and, gentlemen, when I come to put this and that together, I find that one third of my years, and the best of them, have been spent in Cirencester, and in the service of the college. (Cheers.) I came to the college within about two years after its foundation, and I should have been there at its very commencement, but I did not do so for a reason I will explain to you. I came to Cirencester as a candidate for one of the first professorships at the express wish of Mr. Holland, who was always a very kind friend to me. However, I found a man applying for the very appointment for which I sought who was out of health, and, as I knew, a much better man than I, and who wished to live at Cirencester. I went at once to Mr. Holland and said, "I cannot any longer be a candidate." He thanked me for my candour, and said the next vacancy should be offered to me. I came in two years afterwards at the express wish of the authorities—(cheers)—without making any application for the appointment. I was specially appointed as the professor of geology and of botany, and that post I have held for a very great number of years. However, I need not tell some of you that we have have had troubles in the college and its management before this. I shall not dwell upon them; but it is right I should tell you this, because it is said that as professors we have done all we could to do mischief. We desire to be friends of the college, and we desire nothing better than to spend our lives for and in its service. (Cheers.) I want to tell you that there was a time of trouble at the college, when the students dwindled down to ten. A new arrangement took place; a new principal came; and the whole of these ten resided in my house in Thomas Street. The college then had one student, and to that one student the new principal came. He was appointed to establish a school, and that one student was the only scholar there. The late Robert Brown—than whom a greater friend the college never had—(he was the founder of it)—came to me, and we had an earnest talk about it. He said, "Do you think the college is ruined? Cannot it go on? Is it obliged to be made a school?" "Sir," I replied, "you may found a school when the college is prosperous, but you can never make a school out of a ruined college." "What, is it ruined," he said. "No," I replied, "if we have proper management, and I believe we shall now have proper management." I showed him that the carrying on of the college could not be more expensive than carrying on a school. "Well," said he, "we will still carry on the college system." You know with what success it was carried on. We lectured day after day to ten or eleven students, and in an incredibly short space of time they got on to

be some of the most intelligent men we ever had. I will tell you another thing—it is not because we need to glorify ourselves—but it was a question of expense, and Professors Brown and Voelcker, and myself said, "We have faith that this college will get on well, for no institution is more wanted, and if money is at all in the way, we will give our services for twelve months for nothing rather than see it fail. (Cheers.) Gentlemen, that cheer shows you that we have not been amongst the men who wished to injure the college. We worked hard, and it was found not necessary for us to make any sacrifice of the kind suggested, and the principal and the council would not accept of any such sacrifice. You know how the college went on, and at that principal's death there were somewhere about a hundred students. It was then carried on by the professors, under the presidency of Professor Brown; and during that quarter, so far from losing a student, I believe we added three or four to the number. I could only wish that even such an increase had been continued. I am quite aware that I cannot go on without raising subjects of irritation, and therefore I must beg to thank you most heartily and cordially for the kind reception you have accorded us this day. My brother professors will have the opportunity of addressing you, and you won't at all consider it necessary that these points I have touched upon should be seconded by them; but it is right I should tell you that this crisis with regard to the college has been brought about not by the professors. We do not desire to leave, and never desired to leave this place; and whatever may be said to the contrary about our wishing to stay, I assert before this influential meeting that we showed every disposition to remain at the college. And why? Unkind people may say, but none of you will say, that it was on account of the large salaries we were receiving. If it had not been for other matters beside the college, I could not have lived here. The college stipend would not have been sufficient for me to have married on; and those cheers just now remind me that I am married and have three children. My wife found everything pleasant and nice, and was well received here, and she became so attached to the house in which we lived that she determined me to buy it. That did not look as if we wished to leave, and did not care to stay here. I was devoted to my work, and I do say, though not in a vaunting spirit, that my pupils were attached to me, and whatever has ever been done to divert them from me, I know and feel that they are attached to me still (cheers). I have been myself attached to various scientific pursuits. I commenced to lecture—and I may say successfully—upon geology and botany; and I can point now to students in my class who are now members of the geological and botanical societies, and fellows of the Society of Antiquaries—men who have gone on flourishing in the pursuits they delighted in. It is not at all that I have taught them everything; but there is something in general conversation, and there is something in taking young minds into a field, and directing them in such a manner that they can easily walk along and teach themselves (cheers). I have found in this district everything that could give me delight. If I turned to botanical pursuits, I found a glorious flora in every direction; and by the kind permission of Lord Bathurst, I had access to the park, and could range over it as freely as if it were my own. In fact I ventured once to say to him that I was more the owner than he, without any of the trouble of it. Again, if I went to examine the different quarries around the neighbourhood. I found glorious specimens of every fossil I could desire; and when I looked at the beautiful antiquities of this neighbourhood, I could not help being in love with them. Some of these have been collected, and we have some of them in

the museum. I am sorry to say that the things got together since I have been here afford lamentable evidence of the vast stores that must have been lost before I came here. But I must say one or two words about the future. I must seek new botanical fields, new quarries in which to break stones, and new antiquarian fields; but I shall always have an affection for this district. I leave that museum of antiquities in trust to you, and believe from all I have heard and seen of a friend of mine on the right, that the museum will not suffer in his hands. I purpose, therefore, in leaving those antiquities to the charge of Cirencester, to leave them in the charge of Capt. Abbott, who has already deposited some 200 or 300 coins therein, and is constantly collecting specimens; and I do sincerely hope he will go on, and that the museum will lose nothing by my departure. I have occupied sufficient of your time. I beg to thank you most sincerely and heartily for the kindness you have shown to me and to my brother professors to-day. I feel it most deeply, and it will be very hard with me if the day comes when I shall ever forget it. I believe it to be impossible to forget, and I do say I owe a debt of gratitude to this place for the great number of kindnesses that I have received here. In fact I have received little else; and as the chairman has spoken so kindly of my aiding science, I have only to say that if I can assist any one of you by any humble efforts of mine, be sure I shall be always ready to come at the shortest possible notice (cheers). Fearing that I cannot individually shake hands with so many kind friends I see around me, allow me to wish you all good bye. I trust I shall hear occasionally how some of you get on. I hope I shall meet my friends the farmers at our agricultural gatherings, and if I can win any of the prizes they intended to get I shall try to do so (loud cheers).

The Chairman next proposed the health of Dr. Voelcker, which was received with great cheering. He remarked that there was a peculiarity in the connection of Dr. Voelcker with the college. He was a stranger and they took him in. They were told that angels had been sometimes relieved in the garb of strangers. Dr. Voelcker was only a man, but he was a stranger. He was sure there must have been some loadstone which drew him to this country, and attracted the iron in his constitution. No doubt they were aware, or at least they ought to be aware, that Dr. Voelcker got his early instruction from the great European chemist, Liebig—the man who to this day stood highest in the ranks of chemical science. Dr. Voelcker was eminently a practical man. This country had got him and meant to keep him. They had turned his children into English children, and almost the professor himself. The King of Prussia tempted him to leave Cirencester, but he replied that though he loved the fatherland still he was attached to England, where he was taking root, and would not leave. They must heartily regret that he was separated from this institution, for he was still the great chemist of agriculture. He gave them the health of Professor Voelcker.

The toast was enthusiastically drunk.

Dr. Voelcker, who was received with loud applause, said: My friend the chairman has spoken so kindly and feelingly respecting my merits, and has touched on so many tender points, that I feel very great difficulty appropriately to thank him for the hearty manner in which he proposed prosperity to myself in my future career, and the not less hearty way in which this toast has been received by every one of you. I feel a difficulty in expressing properly the gratification I feel in being here to-night. People may call this a complimentary dinner if they please. I do not like complimentary dinners, and I do not accept it as such, but as a mark of sincere and heartfelt respect. It is your personal feeling of respect and

kindness which prompts you to do us the honour which you have done us to-night. The chairman has alluded to what little fame I may have as an agricultural chemist, and certainly it is gratifying, as it is to every sensible man, to know that his reputation extends beyond the borders of his own county. Even that is not to be despised, but it is more gratifying when it extends throughout the length and breadth of a country like England. I may say so without assuming too much, because I occupy the honorable position of consulting chemist to our great national society. And I think you have reason to be proud of it yourselves, because you took me in as a stranger, as a young man without anybody to back him, without seeking favours or patronage, which some of our great people here, as well as everywhere else, are so forward to bestow. I did not seek it, but always declined it, for to a man with a sense of propriety nothing can be more disagreeable than the reception of that description of patronage which arises not so much from kind considerate feeling as with a view of showing off, and making one's self out to be a great man in his own neighbourhood. But notwithstanding all this, I have, with hard work, risen to the top of the tree in my own particular profession. Though this is quite true, and though it is a source of great joy and pleasure to me to say as much, yet I can assure you that what gives me more pleasure is to have a good character in my own native town—for I have made it my native town (cheers). It is a hard thing, after a man has been tossed about and is settled down, to be thrown by the force of circumstances—I do not say what circumstances—upon the world at large. But although we shall all have to seek a new field of labour, I truly believe that we shall not be forced to break stones in any of the quarries to which my friend Professor Buckman has alluded (laughter). Wherever we go I believe we shall have the hearty good wishes of the people of this neighbourhood, and particularly of my friends the farmers of England (cheers). It is with joy and pleasure I find I am so well received in this locality. It is said we never know our friends until we part from them. Many I have never spoken to have come to pay us respect. I believe it is not done as a mere piece of formality, but to show us their real feeling. After all a man may be great and his fame be spread far and wide; but if his character does not bear looking at except from a distance, if he is obliged to look down in a bashful manner when he meets his friends and neighbours in the street, he is not a good man. We like to see a straightforward man like a good Englishman, and like a good German too. We like in England an outspoken man, a man who really expresses his opinions with moderation, who has judgment and a deep sense of right and justice, who has sufficient boldness to express what he believes to be right, and yet is not so conceited as to think everybody who disagrees with him is a fool or a knave (cheers and laughter). In England there are great political and religious privileges, and you may well conceive that a man, though fond of his own fatherland, may still be fonder of his second land—the land of his adoption (cheers). I have said this to show you that it is not for any light motive that I leave this town and neighbourhood. You may think that I leave without any good ground or reason; but I leave it to you to consider whether it is likely that a man at my time of life, who has lived here happily for fourteen years, who has met with nothing but kindness on all sides, who has married here (for a man is but half a man if he has not a better half) (laughter), who has five children born here, would be likely to leave on the slightest occasion the place where he is prosperous, whether you take it on general or particular grounds. It is said to be well known that one of the most ticklish places in which you can attack an Englishman is his pocket. Is it likely

I should throw away some £400 a-year clear, and start fresh in life, and give up this income? I did offer to give up some part of it for one year, but that was not required; and it is not likely that any one would throw overboard his advantages and make himself miserable, and have the battle of life to fight again for some time. I am very fond of comfort myself, for I am very hard at work occasionally, and that is another point that touches me. I have a very comfortable place, where one can walk about and smoke a pipe in slippers without any one seeing, and that is a comfort (laughter). I greatly regret the disturbance and the loss of friends. I hope you will forgive me if I have not expressed so deeply as I could wish the sentiments which really moves my heart. I wish I could express appropriately how much I feel the kind reception which you have given me to night (loud cheers).

The Chairman next proposed the health of Professor Brown, another of the band who had been knit together in the closest ties. It was, unhappily, not uncommon in the scientific world to find a degree of suspicion, envy, and jealousy; but he had never heard of any falling out between the professors. He thought this was an evidence of the ability which had elevated them; and he rejoiced in the reflection that they would not be the losers by leaving us. It was we who would be the losers. If it came to be a pounds, shillings, and pence question, it was perhaps the best thing for them, while we should have to lament it. Men who had done their duty as they had done, would in the end reap the reward. With respect to Professor Brown, he had special reason to regret his loss, for he was a small farmer, and kept a little stock, and as often as he had disease or any difficulty with his stock, he sent for Professor Brown. But he had generally sent too late. He was also reminded that the professor had never made any charge (laughter and cheers).

This toast was also warmly received.

Professor Brown returned thanks. He observed that there was an old saying, that "truth will out," and although there had been an understanding that nothing unpleasant should be alluded to, yet his colleagues had not been able to avoid all reference to the cause of their leaving. They are leaving because they cannot stop any longer. They don't want to go, but something has occurred which made it better that they should go. They had, however, agreed not to speak of the college disagreements, and he recognised the good taste which dictated the proceeding. If those present were the opponents of the professors, he should feel inclined to enter into these matters, but as he was aware a great majority of them were the friends of the professors, it would be ridiculous and childish to do so, when they would be perfectly sure of having nothing but a very favorable hearing. It had been remarked that the professors who were leaving had been associated together for a very long period, and it was a noteworthy circumstance that during that long period, of nearly thirteen years, there had never been a single serious disagreement between them (hear, hear). They had all worked together, as Mr. Haygarth liked to express it, as a band of brothers. He had seen three principals at the college, and he believed that some of his colleagues had seen four or five. They had remained faithful to themselves as a body, and there was something not altogether pleasant in the reason why a staff who had worked together so long, were about to leave the institution where their services had been so long employed. With reference to the motives of the professors, it had been said that they wished to injure the place. This was utterly absurd. What motive could they have to injure an institution which they had served so long, and which they had taken so much delight in serving? The college, at the present time, stood alone as an institution

of the kind. Various schools of agriculture had been tried in different parts, but they had either failed or had not been what the college was intended to be, a truly national institution. The Royal Agricultural College had attained a very important position, and he could not refrain from expressing his profound regret that it was not now in the hands of those gentlemen who were the original founders—in the hands of the shareholders who had established it. He had great respect for numbers, and he believed that "in the multitude of councillors there is wisdom." Among the shareholders there was a sufficient number of qualified men to administer the affairs of the college with prudence. He would endeavour to pay all honour and respect to those gentlemen who, when the college was in difficulties, had come forward and found the means of continuing it. He admitted the importance of this step, but at the same time he deeply regretted the necessity for it. The college had not been, up to that time, so well supported by the farmers as it ought to have been, and he must be permitted to say, that farmers twenty years ago were not so well educated as they now are. The college, notwithstanding that it had been opposed by what were called practical men, had made a progress with which its friends had every reason to be satisfied. Professor Coleman, he believed, was of opinion that the practice of agriculture was better learnt in the farm than in the college; but it was necessary that we should have the farm as well as the college. A lad learnt best the rudiments, and a man learns best from practice. Teach the one what ought to be done, and leave the other to inquire how it is to be done. The professor then went on to speak of the relation of veterinary science to agriculture, and he referred at some length to the importation of live stock from abroad, bringing with it epidemic diseases, which caused immense havoc on English farms. Before the importations were allowed, many of the diseases were little known, but our flocks and herds would continue to suffer from them so long as our import laws are unchanged. He spoke of the ravages made last year in Wiltshire by the smallpox in sheep, and the steps which were taken to arrest its progress, which were very successful. He stated, as his firm conviction, that when that disease made its appearance among English flocks, it had always been imported from abroad, and so communicated. He said it remained for him to express to the company his profound appreciation of their extreme kindness, but which was only what he had received at their hands ever since he came to the college. He observed that it was from no pecuniary reasons that he had stayed so long at the college, nor was it the wish of his friends that he should do so. But he liked the place, and it gave him an opportunity for minute investigation, which he might not otherwise have enjoyed. If everything had gone quite pleasant, he should very likely have remained there for ever (cheers).

The Chairman said he now came to the health of Professor Coleman (loud and long-continued cheers). The professor was the first student at this college, and if he had shown ability and fitness for his position, he had begun to learn it here (cheers). He learnt it in the college, and he had gone into the fields and practised it in various parts of England. The best days of the college farm had been under his administration (loud cheers.)

Professor Coleman said no language he could utter would in the least degree give expression to his feelings on this occasion, or express his thanks for the manner in which they had received the toast of his health, or in which their worthy chairman had proposed it. They were previously aware that their chairman was a man of energy and action. They now knew that he was a poet, and occasionally dealt in the ideal and in

the romantic. At least, he could only attribute to poetic licence what the chairman had been kind enough to say of him, but while he was far too modest to think that he had deserved the kindness that had been shown to him, he believed there had been no lack of sincerity either on the part of the chairman or of the company (cheers). An Englishman has a proverbial attachment for his roof-tree, be it never so humble, and would feel great sorrow in leaving it. What must it be then, as in his case, when to use a scriptural expression, his lines had fallen in pleasant places (cheers). There was also great uncertainty about the future, which was another subject of regret. He therefore felt that their kindness this evening, which was but an example of the kindness he had received ever since he had been here, would be a most soothing balm for all the troubles and sorrows which he had felt and expected to feel. He saw around him a great number of his fellow-townsmen and a very large circle of his brother farmers, and he could not sit down without expressing to them his heartfelt thanks for the kind way in which, on all occasions, they had received him. Whatever progress he had been permitted to achieve in his position had been due in a great degree to the open hand that had always been extended to him, to the open heart and to the open hand, if he might use the expression. He had never found his brother farmers saying, "We won't tell him anything: he is come to teach us." That had not been the feeling, and he had felt that he could teach them anything; but in relation to practical agriculture, he was the pupil and they the teachers in this particular district. But he endorsed all that had been said by his brother professors in relation to the immense value of the Agricultural College. It was not true that he had been wrapt up in practice, and had not appreciated the noble sciences taught in the institution. He owed to the instruction he received there, partly under Professor Buckman, that teaching which had enabled him to occupy the position which he had for the last seven years. He maintained that the farmers of this district recognised the importance of scientific knowledge in agriculture. The recollection of this evening would be a lasting solace to his mind, and he should look back with regret upon the change he was about to go through (loud cheers).

The Chairman said they had now accomplished the list of toasts peculiar to their meeting, and notwithstanding that they had a very pleasant company, and were greatly enjoying themselves, he thought, considering the lateness of the hour, they should now close the proceedings, with a hearty wish for the long life, happiness, and prosperity of their guests, the professors (cheers).

Mr. Vaisey said, before they parted, he wished to propose the health of their worthy chairman, with thanks to him for his kindness (loud cheers). He had had many occasions lately of meeting him, and a more worthy upright man they could not find (cheers).

The Chairman said he was very much obliged to them. The position he had held that evening had not been sought for by him, but there was some little difficulty in finding a chairman, and he could not refuse, and he had been very glad to meet them (cheers). He had another motive for accepting the invitation, and that was that in his person they might remember his lamented brother, who, if it had pleased God to preserve him, would have been their fitting chairman on such an occasion as the present. His brother loved the farmers and loved the science, and did while he lived what he could. He accepted the post in the place of one whom they all loved (loud cheers).

The company shortly afterwards broke up.

Veterinary Jurisprudence.

IMPORTANT "DOG" QUESTION.

At the Bow-street police-station, in London, Mr. Love, chief officer of the Society for the Prevention of Cruelty to Animals, accompanied by Mr. Bishop, the celebrated gun-maker (and who, a few years ago, brought forward a bill to prevent dog-stealing), of New Bond-street, applied to Mr. Corrie, for a summons against a lady named Hicks, for causing a valuable dog to be cruelly destroyed under the following circumstances:

It appeared that Mr. Bishop, the owner of the dog, called at Gray's-inn-square about a week ago, leaving the dog in his cab, with particular directions to the cabman to look after it. When he returned to the cab he found that the dog had been permitted to escape, and, besides causing every inquiry to be made, he advertised in the papers and printed bills, offering a reward for the recovery of the animal. Subsequently it came to the knowledge of Mr. Bishop that a Miss Hicks, an elderly lady living in Southampton-buildings, had seen the dog in Gray's-inn-square, and had given some man sixpence to destroy it, "because it was foaming at the mouth, and appeared likely to faint." The man who killed the dog lived in North Mews, near Miss Hicks's residence, and it has been ascertained that she had previously employed him on the same business. She was connected in some way with a "Dog's Home," but the society altogether repudiated her acts in adopting such measures, instead of causing stray dogs to be taken to the "Home." Miss Hicks justified her conduct by alleging that the dog, in her opinion, was going mad; but there was not the slightest reason for this presumption, and as it appeared to be a favorite pastime of the lady, it was considered desirable, for the protection of all dog-owners, that her proceedings should be checked.

The Magistrate.—But you ask for a summons on the ground of "cruelty?" The question then is, Mr. Bishop, did she cause the dog to be put to death in a cruel manner?

Mr. Bishop.—The man first tried to hang the poor animal, and failing in this knocked it on the head. I assure you it is the greatest blow that has ever been inflicted on me and my family.

The Magistrate.—Possibly the lady may have been mistaken, but you cannot show any intentional "cruelty."

Mr. Bishop (greatly excited).—Was it not "cruelty" to me—to my niece—to all my family? "Love me, love my dog! It has broken up our peace and happiness at home. We would not have parted with the dog for half a million of money. Is a woman to go unpunished for such a crime as this, for deliberately killing an innocent, beautiful, harmless dog, because it was merely "panting" a little?

The Magistrate.—I can make some allowance for your feelings, and if they can be soothed by pecuniary compensation, no doubt you can proceed against the lady by action for damages; but it does not come within my province to interfere at all in the case.

Mr. Love said he feared there was a "difficulty" in the case, the lady having no doubt acted from a mistaken and not a malicious motive; but

Mr. Bishop was very anxious that the society should investigate the matter, and he had done so.

The Magistrate.—I am very sorry it has happened, but cruelty to the animal must be shown, not to the owner. The act does not deal with the feelings of individuals.

Mr. Bishop.—Feelings! This dog was my life—my wife's and my niece's life. I would sooner have lost every gun in my shop.

The applicant then retired, but returning almost immediately with his own Act of Parliament in his hand, he said:

A thought has occurred to me, sir! Cannot I charge this woman with stealing my dog? She hires a man to take it from Gray's-inn-square to a mews in Southampton-buildings, there to be cruelly killed.—Is not that an act of felony?

The Magistrate.—Certainly not; unless you can show that she did so for the sake of possessing its skin or carcase. At all events, I should not commit a person on such a charge. I am aware that you obtained the act, but you cannot find a clause to that effect in it. As I said before, the lady may have acted very improperly. I give no opinion on that point. But I am certain you cannot charge her with cruelty or felony.

DOGS, WARDS OF COURT!

Dogs had attained one step higher in the social scale when they were announced for exhibition at an annual show. We now find them literally figuring as "wards in Chancery," undergoing those paternal attentions which lords and vice-chancellors occasionally pay to young ladies and gentlemen. *In re* Ude (before Vice-Chanceller Sir J. Stuart, on Saturday), the testatrix (said to be the widow of the celebrated cook, M. Ude), by her will directed the trustees to invest sufficient money in their names to produce the annual sum of £10 for the support of each of her three dogs, Yorick, Minnie, and Fanny, or such of them as might be living at her decease; such sum to be paid to her grandchildren so long as the dogs should live and her grandchildren be willing to take care of them; otherwise the trustees were to find some person to take care of them. One of the dogs died last September. It was now proposed that a sum of £666 13s. 4d. three per cent. consols, should be set apart to answer the annuities to the two surviving dogs. Mr. Bacon, Mr. Malins, Mr. Eddis, and Mr. Cracknall were counsel in the case. The vice-chancellor made an order as proposed. [It is not said whether the annuitants were present to "bow wow" their sentiments to the court.]

HUDDERSFIELD COUNTY COURT.—May 11th, 1863.

Before J. Stansfeld, Esq., *Judge.*

Sheldon *v.* Carter.—Jury Case.

The plaintiff, Mr. Sheldon, is a farmer and innkeeper, at High Hoyland, near Barnsley, and the defendant, Mr. Carter, is a farmer and

shopkeeper, at Scissett, near Clayton-west. The plaintiff's claim was for £14 0s. 6d., which he alleged he had lost in the purchase of two cows of defendant.

Mr. J. I. Freeman, of Huddersfield, appeared for the plaintiff, and Mr. Dransfield, of Huddersfield, for the defendant.

The jury consisted of nine respectable "good men and true," Mr. Thomas Barber, manufacturer, Upperthong, being foreman. The case had been before the court several times before.

In January last, at the hearing of this same case, his Honour gave plaintiff a verdict for £10 10s., a report of which appeared in the 'Chronicle.' However, it seemed that nothing would satisfy defendant but "trial by jury." He therefore applied for, and obtained an order for a new trial.

Mr. Freeman stated the case to the jury, and then called Mr. Sheldon. The case in regard of the first cow may be given in a few words. It appeared that plaintiff had bought a cow of defendant in February, 1862, which Carter had warranted to calve in the following April, but she did not calve till the 26th of June following, and for this overtime he claimed £2. The second cow, which was the main point at issue, was bought in the evening of the 5th of March, 1862. It appeared that Carter had called at Sheldon's that evening on his way from Barnsley market, and had asked Sheldon if he could do with another cow at the same price he gave for the former one. Sheldon said he could, if she was as good a cow as the other. Carter then said she was a better cow than the other. The two then came to Scissett to look at the cow. It was a wet and windy night, but they rode with Mr. Hinchcliffe, of Skelmanthorpe, in his conveyance. On going to the cow, Sheldon found her in a shed, apart from the other cows, which were in the mistal. They had a candle lighted to examine her by. He observed that she was "very thin and rough." Carter said she was "hearty and would eat anything," and that she was to calve at Michaelmas. They bargained for £14 5s., which he (Sheldon) entered in his cow-trading book when he got home. When the cow came to Hoyland, on the following day, Edward Grange, Sheldon's man, saw that something was amiss with her. She had a cough, and was very "puny." She was put in the mistal, and was much cared for. Carter called in a day or two, and they told him the cow was ill. He wished them to go to his house for a drink (he deals in cow drinks), and give it her, which they did, but she got worse. At the week's end they had to send for the cow doctor, who prescribed for her. Carter came again, but the cow was no better. He advised them to destroy her; in fact, to "knock her o'th' yead." They did not do so, but endeavoured to bring her round. In extras she had had three bottles of wine, at 7s. per bottle; 18 gallons of "Old Tom," at 1s. 4d. per gallon; oil cake to the amount of 23s.; and oatmeal to the amount of 34s. These, with the doctor's bill, and the loss of £3 on selling her, would amount in the aggregate to £12 0s. 6d., which he considered he had lost by the cow. In September last he paid Carter a bill for horse corn, on which occasion he asked him to make some compensation for the loss he (Sheldon) had sustained; but Carter said he would not allow him a d—d shilling for the cow. Sheldon then said he would try to make him.

Mr. Dransfield put the plaintiff through a rigid and long cross-examination, but nothing was elicited to assist the evidence.

James Crosland was next called on the part of the plaintiff. Witness was a servant of Carter in the fore part of 1862. He remembered Mr. Sheldon coming to buy a cow early on the morning of the 15th of

February; Carter was not up, but he got up, and they came to look at a red and white cow, which was in the mistal with others. Sheldon asked when she was to calve? Carter said he would warrant her to calve in April. The price was £14, with the assurance she was to calve in April. He (witness) also remembered Sheldon coming on the night of the 5th of March to look at a roan-coloured cow. This cow, he said, had been bought by Carter on the previous Thursday, and was not well. She was put in the shed entirely to herself, and not near the other cows; she could not eat, and therefore would not do for Carter. Witness was to say nothing about the cow, and his master said he would sell her. When Sheldon came, Carter ordered witness to take all away from the cow, and to "straiten her up a bit." It was a wet night when Sheldon came. Mr. Hinchcliffe was with him, but he did not know whether the latter stopped. Witness got a light and went with Carter and Sheldon to look at the cow in the shed. On seeing her, Sheldon said she was thin, and not all right. Carter assured him that she was "as hearty as a fish, and would eat anything." She was sold for £14 5s. Witness had been in the habit of going with his master to the markets, and the latter entered his cow transactions in a book, but it was not the book shown in court, it was a much larger one.

Mrs. Sheldon was the next witness. She remembered Carter calling at their house, and saying he had a good cow if they wanted one. Her husband bought the cow on the 15th of February, 1862, and she came on the 18th. She calved on the 26th of June, but was to have calved in April. She (witness) also remembered Carter calling again in March, and saying he had another and a better cow than the last. Her husband went with him, and bought the cow, and she came the following day. Witness went to look at her and saw she was not well. Carter came on Saturday and they told him of her. He wished them to go for a drink to his house, and give it her, which they did, but the cow was no better for it. The cow was a roan colour.

Edward Grange was next called. Witness was Mr. Sheldon's servant man. He went to Scissett on the 6th of March for a roaned cow. When he had got her home, master said he thought she was not well, and, ultimately, they had to call in the cow-doctor. He (witness) had asked at Scissett why the cow had been kept to herself? Carter said it was because she was not well, and for fear of "appydemic" to the other cows.

Sarah Ann Woodward said she was servant girl at Mr. Sheldon's. She knew of a cow coming to her master's on the 18th of February, 1862, and of another coming in the fore part of March. The second cow was poorly when she came.

Mr. Thomas Hinchcliffe, tallow chandler, Skelmanthorpe, said that he had taken Messrs. Sheldon and Carter from Hoyland to Scissett in his conveyance on the stormy night in question. When on the road, Mr. Sheldon's hat was blown off, and while that gentleman went to gather it up, he (witness) said to Carter that there must be something up in going to look at a cow on such a night as that. To this Carter said, "Say nothing about it; its all right; the job is done." Witness called with Carter at Sheldon's the week after, and they asked how the cow was? Mrs. Sheldon said she was very ill, and that Carter had advised them to kill her. Witness had some conversation with Carter afterwards, when the latter said he ought to do something towards compensating the Sheldons for the cow, but if he (witness) would keep away, then he (Carter) "could beat the devils."

John Exley, gardener, of Scissett, next spoke to having some conversation with Carter on their way home from the Mason's Arms, at Clayton,

relative to a book which Carter had shown him, and in which were entered his cow transactions for twenty years, but the book shown in court was not the same, the other being much larger. The book was much scrutinised by the judge and jury, and it was thought to have been got up for a purpose.

Henry Popplewell, of the Mason's Arms, deposed to Exley and Carter being at his house, and their leaving together.

Mr. Godfrey Smith, veterinary surgeon, Barnsley, was the last witness. He had been called in to see the cow. He found her suffering under chronic disease of the liver, of some weeks' standing. He attended her through April. He had ordered her to have the wine, "Old Tom," &c., spoken of by Mr. Sheldon. His own charge for medicine and attendance was upwards of £3.

This was the case for the plaintiff. None of the witnesses had been shaken in cross-examination.

Mr. Dransfield then addressed the jury for the defendant. They had heard the points of evidence on the other side. The points which he should bring before them they would find were very contradictory to those for the plaintiff. Except a warranty could be proved, the plaintiff could not recover. Then there was the particulars as to time on which they would find some discrepancy. He should call before them Mr., Mrs. and Miss Carter, and they would hear the nature of the evidence they (the witnesses) would give, and it would be for the jury to judge of its credulity.

He then called *Mr. Carter*, whose evidence will be best described by stating that he flatly contradicted almost everything stated by Mr. Sheldon. In his cross-examination, too, by Mr. Freeman, with confident assurance, he gave the lie direct to nearly all that the plaintiff's witnesses had sworn to. In answer to Mr. Freeman, he said they had all sworn falsely, but he had spoken the truth.

John Hirst, an innocent-looking man, was next called. Witness had been in the service of Mr. Carter twenty years. He remembered two cows being sold, but did not know when, but one went away on the 4th December, 1861. In answer to Mr. Freeman, the honest man said he had been told what to say before he came.

Mrs. Carter was next brought forward. She knew all about the second cow, but nothing about the first cow. It was sold in their house in the evening. It was a wet night, and Carter came in to put off his wet clothes, and then went out again, but she did not know what for. He came in again by himself, and afterwards Sheldon came in with the milk the cow had given, and said she would do if they could agree. She was sold for £14 5s. When her husband came back from Barnsley he said the cow was poorly at Hoyland, but Crosland (their servant) said she was not poorly but had improved in her milk.

Miss Carter was then called. This witness remembered the second cow affair. She remembered Sheldon bringing in the milk, and his saying the cow would do if they could agree. She got tea ready for them. Crosland had said the cow would do for any one. She had improved in milk.

Sarah Peel, an elderly dame, sister to Carter, gave evidence to the effect that she was in when Crosland came in, and she observed that it was a good meal of milk, and the cow would do for anybody.

This was the defendant's case.

Mr. Freeman, in replying, said he had no doubt the jury would at once see on which side the truth lay. As to the defendant's book of entries, which the jury had seen, he contended that it had been got up

for a purpose. He represented the witnesses as having perjured themselves. He thought it would be an insult to his Honour and the jury for him to go at any great length into the matter. In conclusion, he had no doubt the jury would give his client a verdict for the full amount.

The Judge then summed up, commenting on the evidence as he proceeded. On getting to that of the Carters, he said that it was singular that Mrs. Carter should know all about the second cow, but nothing about the first. He also commented on the "rememberings," &c., of the others. As to the book of entries, he thought there had been some erasures, but the defendant had sworn that there had not. Then as to the time—that was of some importance, and also whether there had been a "warranty." Plaintiff had stated a particular time, and was supported by four witnesses; while the other side had stated a different time. Again, a warranty might be a warranty without actually using the word. An assurance that the cow was "hearty, and could eat any anything," might be a warranty. But a breach of a warranty must be proved. After some further remarks, the Judge left it with the jury to decide whether such had been proved. They had heard the evidence, and he had no doubt of their coming to a just verdict.

The jurymen retired. On their return into court, the foreman said they had found a verdict for the plaintiff for £2 in regard of the first cow, and for £10 in the second case—£12 in the whole, with costs. Thus ended this notorious "cow case."

MISCELLANEA.

SAD EFFECTS OF THE DROUGHT IN HUNGARY.

The correspondent of the *Daily Telegraph* says—"My letters from Hungary continue to draw the most deplorable pictures of that country. The Valley of the Theiss (Tisza) is the district where the drought is most terrible. My friend sends me a return which proves that, up to the 10th June, 550 horses, 118 brood mares, 117 oxen, 304 cows, 177 calves, 941 sheep, and 1111 pigs, had died in one village; and up to the 11th, 509 horses, 119 brood mares, 34 oxen, 252 cows, 627 calves, and 916 pigs, in another. A murrain had already carried off 100,000 head of cattle. After the long drought the district was visited by a terrific hailstorm, which destroyed the little remaining vegetation."

ANIMAL FRIENDSHIP.

The following anecdote is related by an excellent French authority:—Three dogs belonging to a rich proprietor in La Vendee were following their master in the chase. One of the dogs pursued a hare, which burrowed itself deeply in the

earth, and in attempting to follow it the dog became itself so deeply buried that retreat seemed impossible. After having endeavoured in vain to assist their companion, the two dogs returned to their kennel, downcast and fatigued; but on the morrow and the day following they again went to the spot where their companion had been lost, each evening returning with bleeding paws and bodies covered with earth and perspiration, and refusing their ordinary food. On the third day, however, the three dogs returned together, the two with their rescued comrade between them, and all of them looking nearly famished. It was evident that the rescuers had laboured most indefatigably to release their friend, by the large hole which was afterwards found in the earth.

WHO IS OLD?

A WISE man will never rust out. As long as he can move and breathe, he will do something for himself, his neighbour, or for posterity. Almost to the last hour of his life Wellington was at work. So were Newton, Bacon, Milton, and Franklin. The vigour of their lives never decayed. No rust marred their spirits. It is a foolish idea to suppose that we must lie down and die because we are old. Who is old? Not the man of energy; not the day-labourer in Science, Art, or Benevolence; but he only who suffers his energies to waste away, and the springs of life to become motionless; on whose hands the hours drag heavily; to whom all things wear the garb of gloom.

OBITUARY.

DIED at Queen's Place, Leeds, 3rd July, 1863, Mr. John Brown, M.R.C.V.S., aged 86. His diploma is dated 1796. Mr. Brown possessed a comfortable competency, and has not practised his profession for the last thirty years.

Died recently at Minster-in-Sheppy, Charles John Milner, M.R.C.V.S., aged 29. His diploma bears date December 17th, 1856.

Died somewhat suddenly of disease of the heart, Mr. W. Bunnell, M.R.C.V.S., Liverpool, aged 53. His diploma bears date February 5th, 1831.

THE

VETERINARIAN.

VOL. XXXVI. No. 429. SEPTEMBER, 1863. Fourth Series. No. 105.

Communications and Cases.

A SEROUS CYST SITUATED IN THE DIAPHRAGM.

By Professor Varnell.

This specimen, which will be presently more particularly alluded to, was forwarded to me by Mr. A. Santy, M.R.C.V.S., Market Deeping. I shall not attempt to describe the details of the treatment he pursued in the case, as such would be of little avail, but content myself by simply extracting from his communication such particulars as I consider are of interest in relation to the diseased organ. Mr. Santy in his letter states: "I have sent you a morbid specimen, which I think you will find to be of interest. It is a portion of the diaphragm of an aged pony, which on its return from a journey was attacked with symptoms of colic. This was on the 12th of June. Little notice, however, was taken of the animal until the 13th, when I was sent for. On my arrival I found the pony standing in one corner of his box, apparently free from all symptoms of colic. The heart was beating with a violent spasmodic jerk, and the breathing was very much embarrassed, both being distinctly heard by me some little distance before I reached the stable. On taking the pulse it was found to be seventy per minute. I continued to attend the pony up to the 17th, when it died. Very little alteration took place in the symptoms during the animal's illness, except their becoming much more aggravated. I made a *post-mortem* examination, and found every organ apparently in a healthy condition, with the exception of the diaphragm, on the right side of which the tumour I send for your inspection was placed."

The tumour consisted of a large cyst filled with nearly a

transparent serous fluid. Its walls were considerably thickened, and could easily be detached from the structure of the diaphragm. Before the cyst was laid open it measured as much as six inches in diameter. The precise situation of the cyst was at the inner border of the outer muscular portion of the diaphragm, and about midway between the ensiform cartilage and the spine. The muscular tissue at this part of the diaphragm had entirely disappeared. There was no indication, as far as I could detect, of adhesion as a result of inflammatory action either between the organ and the lung in front, or the coverings of the liver behind; and as both these organs were free from disease, it is difficult to determine what could have given rise to the formation of the cyst. The only conclusion I could come to respecting it was that it partook of the nature of an hydatid, which idea is strengthened by the fact that the wall of the cyst itself had no connection by continuity of structure or blood-vessels with the structure of the diaphragm.

ON THE EXHIBITION OF ANIMAL FOOD TO HERBIVOROUS ANIMALS IN VETERINARY PRACTICE.

By Professor VARNELL.

A FEW months ago I was requested to see a horse, the property of a gentleman living at Highbury, which at the time was under the care of a veterinary surgeon. It is not my intention to describe the particulars of the case, as they have no important bearing on the circumstances which I have lately been put in possession of relative to the horse's recovery. I may, however, remark, that at the time I saw the horse he was suffering severely from what I considered to be intestinal obstruction, and I was told that the attack had then lasted three days with slight intermissions. I must confess that I was unable to diagnose the case to my satisfaction, but my prognosis, however, was very unfavorable. I suggested a change in the treatment, which I believe was carried out to the letter. I heard no more of the case until I received the following communication from the owner of the horse, informing me that the animal had recovered. I have no doubt, however, that for a time he was very weak and ill.

I now come to the circumstance which to me is interesting, and I am inclined to think may be of some practical importance to others.

21st April, 1863.

Sir,—You will remember the circumstance of coming up to see one of my carriage horses, which we deemed to be "*in extremis.*" You saw it, I think, on the Saturday night, and on the following day the poor animal seemed much worse; he sat up on his haunches, groaned, or rather bellowed with pain. At times he would bury his head in the straw, then rise partly and sit on his haunches again, and so continue for hours. When we got a passage through his bowels, he seemed a trifle better, but alternated between improvement and the contrary for days. My cook was making some strong stock for soup, and the idea struck my boy of giving the horse some. To his surprise the horse readily took it, and afterwards from two to three weeks I had *a shin of beef regularly boiled down for him, which he greedily took, and neighed for as soon as the smell came to his notice.* He is now quite well, although but as yet I have not worked him.

I was talking to my friend Mr. Solly, of St. Thomas' Hospital, the other day, and he said that I ought to write and tell you about it, and to give his name as being the instigator of my so doing.

I am, Sir, &c.

To Professor VARNELL.

I think the readers of *The Veterinarian* will agree with me that this incident is worth recording. I am not sure that animal food in a soluble form may not become a valuable agent in our practice. We must allow that its composition and solubility admit of its being readily received into the organism and assimilated, and that it would be more suitable to renovate exhausted vital powers than vegetable food. May it not then be resorted to with advantage for the purpose of averting vital exhaustion in painful articular diseases, copious discharges, extensive loss of blood, and other circumstances which might be mentioned?

I would suggest that a trial be made of meat-broths, in cases where much wasting has taken place. We need not be over particular in removing all the fat, for as an element of respiration this may also be beneficial.

HYDATIDS IN THE KIDNEY OF A LAMB.

Communicated by Mr. Lepper, M.R.C.V.S., Aylesbury.

The singular mass which I send, consisting chiefly of hydatids, was forwarded to me by a farmer in this neighbourhood, "as a most extraordary kidney." He stated that the other kidney was pretty much in the same condition, but in this perhaps he might be somewhat mistaken. The specimen was taken from a lamb about four months old, which was said to be in very good condition, in so far as flesh is concerned. At all events, the animal met its death by falling into a ditch, and not from the inroads of disease. I must ask you to excuse this short history, as my time will hardly permit me now entering into further particulars; nevertheless, I could not resist the temptation of sending the specimen to you.

REMARKS BY PROFESSOR VARNELL.

It is by no means uncommon, as is well known, for sheep and lambs, as well as all other animals, to be affected with *hydatids* in different parts of their bodies; but I never remember to have seen any one of the organs of an animal, whatever its age, in which structure was so completely obliterated, as was the kidney of the lamb forwarded by Mr. Lepper. We find from the communication that the other kidney is said to have been in a similar condition. The small portion of the organ which remained, together with the hydatids connected with it, formed a mass as large as a young child's head. At the anterior part of this mass a small portion only of the cortical structure of the kidney remained; but the arteries and veins belonging to the organ could be easily traced through the other parts of the specimen. The *hydatid cysts* varied in size, from that of a pea to a hen's egg. Apparently they were all enclosed in a very fine thin membrane, and connected together by a delicate network of blood-vessels. I shall not attempt to give an explanation, either of their variety, the rapidity of their development, or their effects on the animal economy, but simply content myself by recording the case, believing that it may be of service, at some future time, to any one who is collecting *facts* connected with *entozoa*. I cannot, however, close my remarks without thanking Mr. Lepper for his kindness in forwarding me so unusual a specimen.

OBSERVATIONS ON CASTRATION.

By John Bretherton, M.R.C.V.S., Calcutta.

Having held the appointment of veterinary surgeon to the Calcutta commissioners for a considerable period, I have had numerous opportunities of studying the diseases of cattle, and likewise of ponies. The former numbers 259, the latter 245. The ponies purchased are all stallions, and they are often most troublesome to break to harness. I find, however, that castration, in most cases, has the desired effect. I would, however, bring to your notice a vicious subject, whom, as for some months he could not be made to go in harness, I decided on cutting, and in rather a novel way. I commenced the operation by making a longitudinal incision about half an inch in length, along the course of the cord, as near to the abdominal parietes as possible, and then, by inserting the fore finger of my right hand, I drew out the cord, divided the *vas deferens*, and removed about an inch of the duct. Little or no hæmorrhage took place, but the testicles were slightly swollen for a few days, after which they gradually became atrophied. The pony has never shown any vicious symptoms since the operation, and is now working quietly every day. I should be glad if you would make a few remarks on this operation, as I believe horses may be castrated in a far simpler manner than by the plan now in vogue. As most of the horses in this country are entire, any suggestion on the subject ought to be welcome to veterinary practitioners, as hernia, hydrocele, emission of semen, and all diseases incidental to the existence of the testicles, are most rife in this tropical climate.

REMARKS BY PROFESSOR VARNELL.

Various modes are practised for the purpose of emasculating the horse and other domestic animals, and each plan, in the opinion of him who adopts it, is, almost as a matter of course, thought to be the best and safest. The most common method pursued, perhaps, in this country is, after removing the testicle from the scrotum, to sever it from the *cord* with a hot iron. Another plan, and probably the next most common is, after the gland and cord are laid bare, to place the latter very tightly in a pair of *wooden clams*—"caustic clams"—viz., a small quantity of caustic is enclosed in a groove in the centre of each clam.

Torsion is also resorted to by some practitioners, and, as most veterinary surgeons are aware, the plan consists in twisting the spermatic artery several times so acutely that the inner two coats are cut through, leaving the outer or fibrous one entire, thus arresting the flow of blood. Another method is also adopted, and is said to answer very well, namely, that of scraping the coats of the spermatic artery through with a bistoury, the edge of which is slightly jagged. With a few practitioners the more scientific method of placing a ligature on the artery, and at once removing the gland, is adopted; but I have not heard of any one who has practised the plan proposed by Mr. Bretherton, and carried out by him apparently with success. Now I have no doubt that this plan will likewise answer the purpose for which castration is employed; but I cannot see any reason why a testicle should remain in the scrotum after it has been rendered useless, nor what advantage the plan has over the other modes of operating, unless it be found that a less *per centage* of animals be lost, or that they can earlier resume work after this than after the other methods of operating.

Mr. Bretherton's plan may have some advantages, for the reason that only a very small portion of the peritoneum is injured or exposed by this operation. Indeed, it is possible to cut down upon the *vas deferens*, and divide it in the way described, without wounding that membrane at all; and if this be so, all will admit that the danger of peritonitis supervening is rendered much less. I may be permitted, however, to remark that this plan of operating, although perhaps *practically* new, is nevertheless not so *theoretically*, for some few years ago a surgeon, who occasionally visited the college, suggested the same operation, and urged us to perform it. I also remember another medical man, who proposed to obliterate the spermatic artery by ligature, with a view to the same end; neither of these operations, however, were tried by us.

In offering my opinion on the merits of Mr. Bretherton's operation, I must repeat that I see no advantage in it over the other methods already in use, unless it should, as before stated, lessen the liability to *peritonitis*. Mr. Bretherton, by this time, may possibly have further tested this operation; if so, and he will kindly send me the result of his practice, I shall be under still further obligation to him.

OBSERVATIONS ON "SOUNDNESS."

By R. H. Dyer, M.R.C.V.S., Waterford.

(*Continued from p.* 461.)

By closing one eye, it will be found man is capable of seeing about two thirds of the objects which he can when both eyes are in action. A horse similarly circumstanced, I should imagine, labours under an equal disadvantage. It may be profitable for us to bear this in mind in order to test its accuracy.

Having a professional visit to pay the other day, at Ballyconway, I was requested to examine a four-year-old entire colt with regard to his eyes. Finding capsular cataract in both, the owner of the animal became particularly interested, and inviting me to partake of his hospitality, he put a series of questions relative to eye-diseases generally, after which he introduced me to his son, who suffers from an attack of keratitis, and is consequently unable to distinguish any object, which disease has existed for many months. The case is replete with interest, inasmuch as we, as *veterinarians*, are not often consulted upon such cases as the one alluded to. It may not be generally known that in Ireland there are more blind persons, in proportion to the population, than in any other country in the world save one, which I believe is Siberia. I have not any statistical accounts prepared in reference to blindness in the horse, but I believe the same thing exists in the horse as in man, viz., that there are more blind horses here than in any other known country. A few years since accounts were published as to the number of persons totally blind in Ireland; and there were at that time, if my memory serves me rightly, about from 7000 to 8000 in a state of darkness. Few persons will be inclined to believe such a startling fact. It is not known how many individuals suffer from the loss of one eye only. If such information could be obtained, it would present a truly melancholy picture indeed.

Ophthalmia is so well known that it needs but small mention; still, I think, much as we know about it, it frequently passes from before us in our examinations as to soundness without the slightest remark being made of its presence. If the owner of the animal in question was aware of the feelings of his trusty steed, he would in all probability consult some member of the profession as to the presence or absence of the disease, and I have no hesitation in asserting that the verdict

would be in favour of its presence, and a recommendation of treatment such as was deemed advisable under the circumstances. How different it is when called upon to examine as to soundness; although it is seen and known, scarcely any one would venture to write the word *unsound* against the horse, yet no one would assert that it would be wrong to do so. Custom, however, and the imperfect state of the law are the two causes in operation at the present time. When we take into consideration the speedy manner that diseases of the eyes of our equine patients run their course, it becomes necessary to pay a little more attention to them than is generally done. I have more than once been surprised at the issue of a case, not having been prepared for it. I confess I have examined many horses whose visual organs appeared to me to be in a very suspicious condition, still I dared not state that I considered the animal would soon be subject to an attack of acute inflammation, which in all probability would end in the loss of sight. It has been held by some practitioners that we have merely to state our opinion with reference to the present, and have nothing to do with, either the past or the future. This holds good when writing our certificates in one particular form—for instance, if we certify that a horse is sound, or that he is unsound. This manner of expressing an opinion is very good and legitimate, but if we take the better course, which I have for some years past endeavoured to establish, then I think we should carry our investigation somewhat further, and offer an opinion as to the probable result of any defect we may meet with. This has always seemed to me to be the object of an examination as to soundness. If a horse has an enlargement upon a limb, it can be seen by the purchaser as well as by the veterinary surgeon; but the first named may require the professional experience of the latter as to the nature of the enlargement, which will influence him as to whether the animal be retained or not. So it is in defective vision. An eye may be very small or prominent; either of which may be defects, and cause the animal to shy; or the horse may be subject to periodic attacks of ophthalmia, which will terminate sooner or later in the loss of vision. This state of things should be mentioned. My experience teaches me that only a few cases are of a simple or harmless character. For the most part they are constitutional, and it is not likely cases of traumatic ophthalmia will be submitted to an examination. There are cases, however, occasionally produced to us which have already run their course, and one, if not both eyes, are found to be in a state of darkness. I fear

that, as veterinary surgeons, we are almost as much in the dark as to the true causes of blindness as we were a quarter of a century ago. I think we have gained something in the way of treatment, however, for it is remarkable, with our present store of information, how we can often put off the evil day for a considerable time, which so far is gain.

Writers upon ophthalmic surgery differ as to the name this particular kind of disease should be called by. One wishes it to be called specific ophthalmia; a second, periodic; a third, odontalgic; a fourth, lunatic; a fifth, constitutional; a sixth, hereditary, and so on. I think the term constitutional the preferable. I say this with all deference to my teachers, as I know it is counter to the opinion of some of them. My reason for naming it constitutional is from the fact of there being a peculiar idiosyncrasy in the animal to contract this particular affection. The term lunatic, or moon-blindness, is so absurd that it needs no second thought. Periodic is a very good term, because the eyes are attacked periodically, but for no other reason that I can see. The word hereditary has a too sweeping significance to be used generally. If we employ the term, it most certainly has reference to the whole family. It may be argued, on the other side, that the word constitutional will have the same tendency; but I cannot agree that it has. The animal affected with this complaint may be himself alone subject to it. I know of several similar instances in the human subject.

Writers upon the diseases of the eye have mixed up the various kinds too confusedly. Although the horse is not liable to so many eye-diseases as man, still I am far from believing that the several cases I have seen should be treated of so indiscriminately in books as they are. Percival gives a list of about fourteen different diseases, which are insufficient for the present state of our art. The treatment may be alike in most cases, but at the same time it behoves us to keep pace with the times, and pursue the same course that writers in the sister profession have done. The entering thus far upon matters surgical may be considered a digression. We have merely to consider whether the eyes under examination are in a normal or healthy state, for, as I before stated, it is seldom we are called upon to inspect eyes until all the acute symptoms have disappeared; and when the owner is sanguine that his horse will pass, he offers him for sale. It is at this juncture the best of our judgment is frequently required to be put in force. We will suppose an animal has had an attack of, as I must call it, constitutional ophthalmia—he may or may not have had the advantage of professional

attention. The owner is of opinion the horse is sound; he offers him for sale at a fair; he succeeds in parting with him, subject to the examination of a veterinary surgeon. This may be in the month of July, August, or September, when the weather is extremely hot and the day bright. In all probability there is no house near the spot in which the horse can be placed for the examination of the eyes to be proceeded with. The muscles of the iris have effectually done their work, so as to baffle all the attempts of the examiner to look beyond the iris, and the horse is returned as a sound one, because of the contraction of the pupil. He is said to be all right in this respect. A horse may be totally blind, and yet contraction of the pupil take place.

In simple ophthalmia the eye generally becomes sound and healthy, unless a small feather-like opacity remains from the injury. In old cases of keratitis, we frequently find traces of disease which will, more or less, intercept the pencils of light as they proceed to the retina. With such cases it is not very difficult to deal. They are of necessity unsound. The diseases of the cornea, iris, capsule of the lens, lens, vitreous humour, and retina, are those we have chiefly to consider, although a passing thought may be spent upon the palpebræ; injuries to which now and then require that a portion of either one or the other be excised.

I think the time has nearly passed for any person, however antiquated his views may be, to think of excising the *cartilago nictitans*, although I sometimes hear of such a complaint as the "*haws*" existing. Keratitis, or inflammation of the cornea, is a complaint of some moment to the veterinary surgeon, because an attack of simple inflammation is likely to extend to this structure. The fact of there being more than one layer in the cornea, renders the disease more complicated in its treatment than it would be if one only was present. Indeed, I think this remark holds good in the treatment of all diseases.

It is not probable we shall have our attention directed to a case for inspection until it assumes a chronic stage, which can be readily known by the colour of the membrane. If not perfectly transparent it must be held an unsoundness. The aqueous humour is not liable to a distinct disease that I am aware of. The next tissue in order will be the iris. *Iritis* often follows an attack of keratitis, and is frequently its accompaniment; the result of which, if not taken care of by the practitioner, is an adhesion of some of the fibres of the iris to the capsule of the lens, which will interfere more or less with its

movements. Any abnormal change in its structure will constitute unsoundness.

The corpora nigra in some eyes are particularly large and pendulous; so much so that it would appear they must intercept some of the rays of light, and by so doing produce inconvenience to the animal. During my practice I have never known an animal in any way suffer from this cause. I once rode and drove a horse whose eyes were bountifully supplied with these bodies, and a better pair of eyes I never knew. It has been held to be unsoundness by some teachers. As all eyes have these bodies attached to them, it remains a question whether they should be considered an unsoundness. The result of my observations lead me to infer that they are not inconvenient, but are merely a development of pigment which may be of service to the visual organ under many circumstances.

Since the above was written I have been informed that at a fair recently held in Ireland a horse passed the ordeal of examination as to soundness by a veterinary surgeon, which had been examined by me a few months since—one eye was dark and the other approaching to it. Whether the amaurotic affection under which the animal laboured at the time I saw him was purely sympathetic I am not prepared to say, but I suppose it was, as it is said the same horse was passed as perfect in every respect. I am of opinion, however, I should have observed some symptom, as I have done in many cases before, which would have led me to look for disorders of an occult character, such as chronic indigestion, stomach or heart disease. At the time of my examination these were all absent so far as I could judge, and hence the impression on my mind is, that the disease in this particular case was one of amaurosis produced by chronic retinitis.

(*To be continued.*)

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 270).

In my last communication in connection with the poisonous plants, I brought under notice the botanical characters, &c. of the *Atropa belladonna*, and shall now proceed to give a brief description of another plant, closely allied to

the *Belladonna* in many of its properties, and belonging to the natural order Solanaceæ, viz., the *Hyoscyamus niger* (*henbane*). The following will be found a description of its botanical characters.

"*Hyoscyamus niger* (*henbane*).—*Calyx* tubular, five-cleft. *Corolla* funnel-shaped, the limb spreading obliquely, five-lobed, unequal. *Capsule* compressed, furrowed on each side, opening at the apex by a transverse aperture. *Leaves* sinuated, clasping the stem. *Flowers* sessile."—Lindley.

Of this indigenous plant, which has been employed in medicine from the earliest times, there are two varieties, viz., annual and biennial, the latter being said to possess the most active properties. It is found growing wild in many parts of the country, on heaps of rubbish and waste places, and is also largely cultivated at Mitcham in Surrey, and elsewhere, on account of its medicinal value. The root is long, compact, of a dull-white colour, somewhat resembling the parsnip (for which it has been mistaken). The stem is downy, grows from a few inches to nearly two feet in height, having somewhat large leaves, cut into irregular segments, of a dull-green colour, slightly covered with long glandular hairs, and emitting a peculiar fetid, narcotic odour. The flowers, which appear in July, are of a greenish-yellow colour, or with a network of purple veins, spread over the corolla. All parts of the plant contain a poisonous, nitrogenized substance, named *Hyoscyamia*, which has the following characters: "Its crystals have a silky lustre, not very soluble in water, but easily dissolved by alcohol and ether. It has an alkaline reaction, and its saline solutions are precipitated by tannic acid. It has an acrid, disagreeable taste, resembling that of tobacco. It is highly poisonous, and causes dilatation of the pupils."

As medicinal agents, the seeds and leaves are the parts of the plant most generally employed. The former are small, irregular, honeycombed on the surface, and much resemble the seeds of belladonna; but as sufficient quantity of them is with difficulty obtained, the leaves are more commonly used. The leaves, which should be gathered in the second year, and before the flower appears, as before described, are of a dull-green colour, covered with numerous hairs, and have a narcotic odour, and somewhat bitter taste. When bruised and compressed, they yield a considerable amount of juice, which by evaporation forms the extract ("one hundred-weight of leaves yield between four and five pounds of extract"). This preparation is the one mostly employed by the veterinary surgeon, and may be given in doses to horses

and cattle of from ʒj to ʒiij. When given internally it acts as a "narcotic, anodyne and antispasmodic, being available in all those cases in which we wish to relieve pain, allay irritability, and procure sleep, having, moreover, the advantage of not constipating the bowels like opium."

This medicinal agent is not so generally employed by us as its value deserves. Combined with other agents, it will be found serviceable in cases of chronic cough, and especially in cases where the irritation is confined to the larynx; a small quantity of the extract being placed and allowed to dissolve upon the tongue two or three times a day, will be found to allay the violence and frequency of the cough. By some an ethereal tincture (*vide* 'Morton's Pharmacy') is recommended as an antispasmodic.

It is also employed externally to allay the pain of punctured and other wounds, and also to dilate the pupil of the eye. As a poison, its effects are much more powerful on man than animals. It is a narcotic poison, acting upon the spinal marrow as well as upon the brain, and according to Dr. Taylor, "the special effect of this poisonous plant is manifested in its tendency to produce a general paralysis of the nervous system." Several cases are recorded in which death has been produced both by the seeds and roots, the latter having been mistaken for the wild parsnip, which it somewhat resembles in appearance. In Dr. Taylor's work on poisons will be found the following curious illustration of its effects, in some cases which came under the care of Dr. Houlton: "In a monastery, where the roots had been eaten for supper by mistake, the monks who partook of them were seized in the night with the most extraordinary hallucinations, so that the place became like a lunatic asylum. One monk rang the bell for matins at 12 o'clock at night. Of those of the fraternity who attended to the summons, some could not read, some read what was not in the book, and some saw letters running about the page like so many ants." Its effect upon animals varies, and, like most other vegetable poisons, it is said to act more powerfully upon the dog and horse than upon ruminants. Swine are reported to have fed upon the leaves and stems with perfect impunity. An interesting account of the poisonous influence of the *Hyoscyamus niger* on a cow, by M. Creuzel, will be found in *The Veterinarian* for 1840. In the spring of the year the animal had eaten some of the *Hyoscyamus niger*, growing in a yard, and in two hours after she exhibited the following symptoms: "She was seen suddenly to fall down and abandon herself to very strange and violent

struggles, the pupils of the eyes were very much dilated, the conjunctiva injected, and of a red-violet colour, carotids beating violently, their pulsations to be plainly seen. The cow, resting on her fore legs, was making the most violent efforts to raise herself, and which she at length effected with very great difficulty. She then attempted to move forwards, uttering the most fearful lowings, but she soon fell again, dashing her head against the ground. After this attack of general convulsions, the inspiration became loud and convulsive, a thick spume proceeded from the mouth, and she began to purge violently." By abstracting ten pounds of blood, giving acidulated water, &c., the animal in a few days recovered.

The above brief account of the case recorded by M. Creuzel will give sufficient indication of the symptoms likely to be met with in cases of poisoning by this plant. The appearances after death in the human subject much resemble those produced by belladonna; the lungs, brain, and all parts of the nervous system being much congested with dark-coloured fluid blood. In cases in which this plant has been partaken of, the best treatment would be to expel it as quickly as possible from the system by the administration of oleaginous purgatives, followed with occasional diffusible stimulants, and the application of counter-irritatives along the whole course of the spine. "The only means of detecting this poison after death is by its botanical characters—a circumstance of which the veterinary surgeon may generally avail himself, if acquainted with the science of botany, from the large quantities of the vegetable usually partaken of by the animal and needed to cause death.

(*To be continued.*)

STRANGULATED SCROTAL HERNIA.—REDUCTION BY TAXIS.

By Alfred J. Shorten, M.R.C.V.S., Newcastle-on-Tyne.

On Sunday, April 26th, 1863, at 6 p.m., I was requested by W. Stephenson, Esq., Throckly Hall, seven miles from this town, to visit a horse that was suffering from "colic." On going into the box, I found my patient, a four-years' old chesnut gelding of the light-cart-breed, to be relieved of the more urgent symptoms, his owner having given him an antispasmodic draught and an aperient ball. He was standing

quite easy, and evinced a disposition to feed. His pulse was about 44 and soft, fæces somewhat scanty, and hard. I gave a febrifuge and an enema of warm water, and directed that he should be fed upon a mash diet. Just as I was about to leave, my attention was drawn to his scrotum, and on examining it I found hernia to be present. This affection I was informed had existed ever since he was two years old, and had shown itself after castration, and had always remained much as I then saw it, but excepting that the scrotum was sometimes larger after a hard day's work. I did nothing farther than to direct that he should be watched during the night, and a messenger despatched for me should the pain again set in, adding that, if they did not send, I would see him in the course of the following day. I attended the next morning and found the bowels responding to the medicine, and every indication that the horse was doing well, with the exception of his having a slight cough and soreness of the throat, which, however, a few days' treatment put right. The horse being convalescent I discontinued my attendance.

On the 11th May, at 7·30 p.m., I was again summoned to the animal, the messenger stating that he was "*took bad*" at 10 a.m. while at plough, and was obliged to be led home, when the usual remedies were had recourse to, but he evidently was getting worse instead of better. I naturally feared a case of strangulated hernia, and accordingly provided myself with casting apparatus. &c. On my arrival I certainly was not induced to alter my view of the case, for I found him down, with *his legs stretched out*, breathing stertorious; surface of the body cold and bedewed with a profuse perspiration, mouth clammy, the eyes fixed and glassy, pulse 90, small and wiry; and, in fact, every indication of a speedy dissolution, unless immediate relief could be afforded. The scrotum was hard and tense, and imparted a sensation of an impacted bowel to the touch. I ordered my assistant to secure his legs at once, and while he was so employed I exhibited a cathartic combined with a powerful opiate. As soon as his legs were properly fixed, we proceeded to place him upon his back, which being done I introduced my right hand into the rectum, and found the internal abdominal ring very much dilated, and I could also distinctly feel that a large volume of intestine had passed through it. I grasped the gut with my right hand, and exerted pressure with my left upon the scrotum. Immediately I commenced drawing at the bowel the animal struggled violently, and groaned with pain, which necessarily interfered with my manipulations. I was occupied at least fifteen minutes in extricating the intestine

from the scrotal sac, but at the expiration of that time I had the satisfaction to find I had accomplished my object, as it suddenly quitted the ring with a jerk. On further examination, I found the impacted intestine to contain a portion of feculent matter about the size, shape, and hardness of a duck's egg. I now gently withdrew my hand, and as the horse lay perfectly quiet, I had his legs gradually lowered to the opposite side to that on which the hernia had existed. I also gave him Tr. Opii ℥jss, et Tr. Aconite ℥xij, and afterwards removed the shackles, and allowed him to rise at his leisure, which he did after lying for about five minutes. His pulse was soon reduced to 54, and altered in character, while the surface of the body quickly dried with hand-rubbing. He was indeed altogether a different animal in a very short time; but as he still occasionally looked back to his side, I considered it advisable to apply a sinapism to the abdomen and to have recourse to enemas. I shortly afterwards left, giving instructions for the enemas to be repeated at intervals during the remainder of the night.

On visiting my patient the following morning, the attendant reported that he became quite easy after the irritation of the sinapism had subsided, and that he had partaken of a mash and some tepid water, and had also evacuated the contents both of the bladder and rectum. The fæces were hard and coated with mucus, but a large quantity had been expelled. I continued treatment until the bowels were well emptied, and the animal had regained his usual appetite and good spirits. As the bowel still came down, I directed that he should be fed sparingly, and I also advised the owner to let me place a clam upon the scrotum, to prevent a return of the strangulation. To this he at length assented, and on the 22nd May I had the animal cast, and placing him on his back I again reduced the hernia through the medium of the rectum without any difficulty. A steel clam was then placed upon the scrotum as high up towards the ring as I could possibly get it. Very little tumefaction followed, nor did any untoward symptoms present themselves subsequently to the operation.

The clam remained on until the 8th of June, at which time there was some slight œdema of the sheath and abdomen, which, however, disappeared after a few days, leaving only a skin wound to heal. The healing process was accomplished in due course, and the horse is now apparently quite well, there being no appearance whatever of a rupture ever having existed.

Facts and Observations.

The Coagulation of the Blood.—To determine the cause of the coagulation of the blood is a problem the solution of which has engaged the attention of many, we are proud to say chiefly English, physicians and surgeons, from the immortal Hunter to Richardson. Dr. Richardson, one of the most recent investigators of this subject, conducted a laborious research, from the results of which he concluded that the coagulation of blood was due to the escape of ammonia. In the Croonian Lecture, delivered by Professor Lister, of Glasgow, before the fellows of the Royal Society, in June last, "On the Coagulation of the Blood," that gentleman described a number of ingeniously-contrived and delicate experiments, which he made with the view of shedding new light upon the subject—a subject which always possesses great attraction for physiologists. The lecture is so full of interesting and important matter that we purpose in a future number of this journal to print it *in extenso*. It will, therefore, suffice for the present to state that Professor Lister's conclusions are totally adverse to those of Dr. Richardson, and that the Professor refers the phenomenon of coagulation to a mechanical and not a chemical cause.

A flock of Sheep Poisoned.—The Paris correspondent of the *Times* writes:—"A curious case of poisoning, by which a flock of sheep was destroyed, has been communicated to the Central Society of Agriculture. Sulphuric acid is used in the maceration of the pulp of beetroot, but a farmer who fed his sheep with that vegetable thought fit to add four litres of sulphuric acid and 1800 grammes of sulphate of iron to every 1000 kilogrammes of beetroot. The sheep who ate of the pulp thus prepared shortly became sick, and many of them died. On being opened by a veterinary surgeon strong traces of violent inflammation were visible; and the entrails having been subjected to a chemical analysis, it was ascertained that death was caused by the presence of sulphate of iron in the pulp. No doubt could be entertained on the subject, as other sheep fed on beetroot pulp, to which no sulphate of iron was applied, continued to be perfectly healthy. It is believed in some agricultural districts that sulphate of iron acts more powerfully on sheep than on oxen. The veterinary surgeon who was employed to examine the

sheep poisoned observed on the same farm that cows had eaten with impunity of the same beetroot pulp which had poisoned the sheep."—*Ag. Review, May 29th*, 1863.

Skeleton of an Extinct Ox in the Fens.—Much interest has recently been excited in the minds of geologists and students of the earliest history of the world by the discovery, at Burwell, of a skeleton of the huge extinct ox (*Bos primigenius*), formerly an inhabitant of our fens, having a fractured skull, in which was a broken flint celt. At a recent meeting of the Cambridge Philosophical Society a paper upon the subject was read by Mr. James Carter. The height of the animal, it was stated, must have been from six to seven feet. The celt pressed in its forehead was undoubtedly, Mr. Carter considered, of human fabrication, and he thought it equally evident that the fracture had been produced by this celt. It penetrated the cavity of the skull for nearly three inches, and then broke off at a point that would have been on a level with the skin of the living animal; to all appearances it was broken in the act of inflicting the blow, and, as this mutilated implement was of no further use to the primeval hunter, it was not extracted from the skull. As regarded the antiquity of the remains, the author inclined to the opinion that they need not necessarily be referred to any very remote period, probably to none more remote than the Saxon period. The time up to which the early inhabitants of the fen district continued to use flint instruments was, he thought, more recent than commonly supposed, but the most careful records contained no account of any discovery to elucidate the question, or to add anything to the past history of the fens.

Liebig on London Sewage.—Liebig calculates the solid and liquid voidings of London would yield 42 tons of ammonia, 10 of phosphoric acid, and 7½ of potash daily; the ammonia equal to that contained in 247 tons of guano, the phosphoric acid equal to that contained in 83·3 tons of guano. If, therefore, to the daily sewage of London 100 tons of superphosphate of lime, containing 20 per cent. of phosphoric acid, be added, the value of the daily voidings of London is made equivalent to that of 247 tons of Peruvian guano. The yearly value of the sewage, after deducting the price of the superphosphate, would be that of 90·155 tons of guano at £13 12*s.* 6*d.* per ton, minus £191,628, or £1,036,628. If to this be added the value of the surplus potash in the sewer water, it gives a total of £1,109,006 annually. The

surplus potash daily corresponds to the amount contained in 866 tons of stable-dung. The conclusion of Baron Liebig's letter is sufficiently startling, as it prophesies a complete revolution in the employment of a large portion of the population and capital of the country as the consequence of a return to obedience to common sense science.—*Lancet.*

Baron Liebig.—The King of Saxony has conferred on Baron Liebig the cross and insignia of a Commander of the Order of Albert, in recognition of the services he has rendered to agriculture.

Surgical Instruments constructed of Aluminum Bronze.—M. Morel-Lavallée has recently made a very favorable report to the Paris Society of Surgery upon a pocket-case of instruments fabricated by MM. Robert and Collin, of aluminum bronze, consisting of 95 parts of copper and 5 of aluminum. All the instruments, except the blades, are made of this material; and they may advantageously replace the much dearer silver in many cases, and in others iron, or even steel. The alloy is not oxidizable, and preserves all its brightness amidst the various agents it is brought in contact with in daily practice.

Variability of the amount of Carbonic Acid in the Atmosphere.—M. Mène announces to the Academy of Sciences, as the results of his researches on the quantity of gaseous carbonic acid existing in the atmosphere, that the proportion varies during the course of the same year. It increases in February, March, April, and May, and diminishes from June to August, after which there is an increase from September to November. The maximum is attained in October. During the night there is more than in the day, and more after rain than at any other portion of the day.

Food and Milk of Animals.—It has long been known that various substances (medicines or poisons) influence materially the qualities of the milk of the lactating animal. Some vegetable substances, as carrots and turnips, give a yellowness of colour and an assumed richness. Mitchell, however, from tables by M. O. Henrie and Chevalier, shows that the feeding of cows on beetroot or on carrots makes some real difference in the constitution of their milk. When fed on carrots the proportion of casein was as 4·20, of butter 3·08, of sugar of milk 5·30, of salts ·75, and of water 86·67

per cent. When fed on beet there was of casein 3·75, of butter 2·75, of sugar of milk 5·95, of salts ·68, and of water 86·87 per cent. Thus, while the proportion of water remained the same, the proportion of casein, butter, and salts, was greater under the carrot diet, while the sugar of milk increased under the beet dietary.

New Act to seize Unwholesome Meat.—On Saturday, August 1st, an Act of Parliament was printed to amend the Nuisances Removal Act of England, 1855, with respect to the seizure of diseased and unwholesome meat. The Act is now in force, and a medical officer of health, or inspector of nuisances, may inspect and examine any animal, carcase, meat, poultry, game, flesh, fish, fruit, vegetable, corn, bread, or flour exposed for sale, or deposited for the purpose of sale or preparation, and intended for the food of man; and in case either appear to him to be diseased, unsound, unwholesome, or unfit for food, to seize and take it away, and to have the same dealt with by a magistrate, who, on conviction, may fine the offender a sum not exceeding £20, or commit him to prison for three months. Any person obstructing the medical officer or inspector is liable to a fine of £5. The meat so seized is to be destroyed.

Respiration during Sleep.—M. Delbruck has made some researches on the quantity of air required for breathing during sleep. It strikes him as singular that, while all medical men are unanimous in prescribing several cubic metres of pure air for each person sleeping in a room as absolutely indispensable for health, all animals appear to shun the open air as much as possible in order to compose themselves to sleep. Thus, the lion and tiger retire to some dark cavern where the air is confined; the dog goes to his kennel, and thrusts his snout under his belly; birds, to which the open air would appear to be a necessity, whether asleep or awake, retire to some private corner and put their heads under their wings. Nay, what does the schoolboy do, when left in a dormitory aired with particular care? If he finds he cannot fall asleep, the first thing he does is to bury his head under the bed-clothes. Hence M. Delbruck concludes that, if, when awake, we exhale a certain quantity of carbonic acid, we must inhale a certain quantity of this gas during sleep, just as plants exhale by day the oxygen they absorb during the night.

THE VETERINARIAN, SEPTEMBER 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

THE WORCESTER MEETING OF THE ROYAL AGRICULTURAL SOCIETY.

The meeting of the Royal Agricultural Society which has just been held at Worcester may be said to have been, in every respect, a great success. Although perhaps the receipts for admission to the show-yard hardly realised the sanguine expectations of some, still they will bear a close comparison with the most successful returns. The little falling off, which reduced the amount to something below £6000—the sum hoped to be received—was entirely to be attributed to the showery weather which prevailed on the Tuesday and Wednesday. The first shilling day (Thursday) brought no less than £1915 18s., the good of which must not be measured by the money which found its way into the coffers of the society, but rather by the diffusion of a great amount of information, among the working classes in particular.

It is impossible to calculate the benefit which the agricultural community, directly as well as indirectly, derives by this enlightenment of the sons of toil. Many return home with new ideas, out of which are sure to spring great and lasting improvements, while all are gratified and more or less instructed. Practical information of this kind is unquestionably well adapted to elevate the thoughts of the husbandman, and to give him to understand that his interests are not injured by the employment of agricultural machinery. He thus learns to understand how it is that the farmer who employs the most machinery requires the greatest amount of manual labour in the daily work of the farm, and that this labour is only diverted into another channel, which is as necessary to be filled as that seed-time should precede harvest, or otherwise all will be soon brought to a standstill.

In accordance with our established custom, we give a detailed account of the awards of the stock judges, that our readers may not only use it for present, but for future purposes. We are assured that this is in unison with

their wishes, although the more direct professional matter of the Journal may be thereby somewhat intrenched upon. Much has been said against, and a good deal of opposition made, to the system which has of late years prevailed, of having the horses submitted to a preliminary examination by the members of the profession. We have always advocated this procedure, and for several reasons, but chiefly because it lies at the root of the means which are employed to supply the country with sounder horses than we daily meet with. If proof were wanting that this *desideratum* is being gradually attained, we have it in the fact that at the Worcester meeting not more than *five per cent.* of the horses were found by Professor Varnell to be practically unsound, whereas in times of yore *twenty-five to thirty per cent.* were not unfrequently met with.

For the present we are content to let this fact stand as a reply to the arguments which have been brought against the system, and especially as we shall be prepared, at a more fitting time, with an equally good answer to every objection adduced by its opponents.

Of the freedom from hereditary diseases of the cattle, sheep, and pigs, we have never had more satisfactory evidence at any former meeting of the society. A few years since *scrofula* was making sad inroads among some of our choicest herds; but a rejection of all such animals from competition soon gave a check to its progress, by causing the owners to look carefully to the state of those they were rearing for exhibition and stock-producing purposes. In one thing alone are we prevented from speaking in laudatory terms of the meeting, viz., in the attempts which are still made by some of the exhibitors of pigs to impose upon the public, through the influence of the society—by showing animals which exceed the proper age. We fear the continuance of this evil depends upon the too lenient views which have been taken of the conduct of former offenders; the exercise, in fact, of an overweening charity. We rejoice to see, therefore, that this matter is to come before the Council, and we doubt not that, either by expulsion of the offenders from the society, or by some other equally stringent but just measure—just, because the honest exhibitor will be rightly done by—an effectual check will be given to all such practices. Our space requires that no

addition should now be made to these remarks, and therefore we conclude by directing attention to the award of the prizes, which, upon the whole, never gave more general satisfaction, both to the exhibitors and the public.

AWARD OF PRIZES FOR CATTLE, SHEEP, AND PIGS, AT WORCESTER.

CATTLE.

SHORT-HORNED.

CLASS I.—*To the owner of the best Bull, above three and not exceeding six years old.*

First prize, £25, to No. 6, Jacob Wilson, of Manor House, Woodhorn, Morpeth, Northumberland.

Second prize, £15, to No. 11, John Charlesworth, of Headfield, Dewsbury, Yorkshire.

Third prize, Silver Medal, to No. 13, John Brawn, of Sheffield, Walsall, Staffordshire.

Highly commended. — No. 7, Lord Feversham, of Duncombe Park, Helmsley, Yorkshire.

Commended.—No. 1, Joseph Bickford, of Oxley, Wolverhampton, Staffordshire. No. 2, The Earl of Zetland, of Aske, Richmond, Yorkshire.

CLASS II.—*To the owner of the best Bull, above two and not exceeding three years old.*

First prize, £25, to No. 22, Viscount Hill, of Hawkstone, Shrewsbury.

Second prize, £15, to No. 15, Jonathan Peel, of Knowlmere Manor, Clitheroe.

Third prize, Silver Medal, to No. 26, Col. Charles Towneley, of Towneley Park, Burnley, Lancashire.

Highly commended.—No. 24, Sir Anthony de Rothschild, Bart., of Aston Clinton, Tring, Buckinghamshire.

Commended.—No. 16, Richard Stratton, of Walls Court, Stapleton, Bristol. No. 21, George Jones, of Whitley Court, Upton St. Leonards, Gloucester.

CLASS III.—*To the owner of the best Bull, above one and not exceeding two years old.*

First prize, £25, to No. 41, Richard Eastwood, of Thorney Holme, Clitheroe, Lancashire.

Second prize, £15, to No. 52, Col. Charles Towneley, of Towneley Park, Burnley, Lancashire.

Third Prize, Silver Medal, to No. 44, William Woodward, of Northway House, Ashchurch, Tewkesbury, Gloucestershire.

Highly commended.—No. 55, The Hon. Col. E. G. D. Pennant. M.P., of Penrhyn Castle, Bangor.

CLASS IV.—*To the owner of the best Bull-Calf, above six and not exceeding twelve months old.*

First prize, £10, to No. 86, Sir Anthony de Rothschild, Bart., of Aston Clinton, Tring, Bucks.

Second prize, £5, to No. 70, George Garne, of Churchill Heath, Chipping Norton, Oxfordshire.

Third prize, Silver Medal, to No. 78, Joseph Robinson, of Clifton Pastures, Newport Pagnell, Bucks.

Highly commended.—No. 87, Sir Anthony de Rothschild, Bart., of Aston Clinton, Tring, Bucks.

Commended.—No. 76, Robert E. Oliver, of Sholebrooke Lodge, Towcester, Northamptonshire. No. 85, John R. Middlebrough, of South Milford, Milford Junction, Yorkshire.

Class V.—*To the owner of the best Cow, above three years old.*

First prize, £20, to No. 94, Emily Lady Pigot, of Branches Park, Newmarket, Cambridgeshire.

Second prize, £10, to No. 98, John Lane, of Barton Mills, Cirencester, Gloucestershire.

Highly commended.—No. 93, Earl Spencer, of Althorpe, Northampton.

Class VI.—*To the owner of the best Heifer, in-milk or in-calf, not exceeding three years old.*

First prize, £15, to No. 102, Emily Lady Pigot, of Branches Park, Newmarket, Cambridgeshire.

Second prize, £10, to No. 109, Richard Booth, of Warlaby, Northallerton, Yorkshire.

Third prize, Silver Medal, to No. 113, Col. Charles Towneley, of Towneley Park, Burnley, Lancashire.

Highly commended.—No. 112, Col. Charles Towneley, of Towneley Park, Burnley, Lancashire. No. 106, William Butler, of Badminton, Chippenham, Gloucestershire. No. 110, Richard Taylor, of Manor Farm, Kingham, Chipping Norton, Oxfordshire. No. 111, Edward Bowly, of Siddington House, Cirencester, Gloucestershire. No. 115, John Lane, of Barton Mills, Cirencester, Gloucestershire.

Class VII.—*To the owner of the best Yearling Heifer.*

First prize, £15, to No. 124, The Duke of Montrose, of Buchanan Castle, Glasgow.

Second prize, £10, to No. 128, Col. Charles Towneley, of Towneley Park, Burnley, Lancashire.

Third prize, Silver Medal, to No. 119, Emily Lady Pigot, of Branches Park, Newmarket, Cambridgeshire,

Highly commended.—No. 130, Col. Charles Towneley, of Towneley Park, Burnley, Lancashire.

Commended.—No. 116, Joseph Noble Beasley, of Brampton, Northampton. No. 120, John Hull, of Wharton Bank, Kirkham, Lancashire. No. 127, John R. Middlebrough, of South Milford, Milford Junction, Yorkshire.

Class VIII.—*To the owner of the best Heifer-Calf, above six and under twelve months old.*

First prize, £10, to No. 148, David M'Intosh, of Havering Park, Romford, Essex.

Second prize, £5, to No. 143, Robert E. Oliver, of Sholebroke Lodge, Towcester, Northamptonshire.

Third prize, Silver Medal, to No. 147, Col. Charles Towneley, of Towneley Park, Burnley, Lancashire.

Highly commended.—No. 133, Joseph Hegan, of Dawpool, Neston, Chester.

Commended.—No. 142, Charles Howard, of Biddenham, Bedford. No. 152, The Hon. Col. E. G. D. Pennant, M.P., of Penrhyn Castle, Bangor, Carnarvonshire.

HEREFORD.

CLASS IX.—*To the owner of the best Bull, above three and not exceeding six years old.*

First prize, £25, to No. 155, John Hungerford Arkwright, of Hampton Court, Leominster, Herefordshire.

Second prize, £15, to No. 156, Thomas Davies, of Lady Meadow, Leominster, Herefordshire.

Commended.—No. 153, Lord Bateman, of Shobden Court, Shobden, Herefordshire.

CLASS X.—*To the owner of the best Bull, above two and not exceeding three years old.*

First prize, £25, to No. 167, William Taylor, of Showle Court, Ledbury, Herefordshire.

Second prize, £15, to No 166, William Cooke Morris, of Whitwick, Ledbury, Herefordshire.

Third prize, Silver Medal, to No. 163, Henry Rawlins Evans, junior, of Swanston Court, Dilwyn, Leominster, Herefordshire.

Highly commended.—No. 164, John Albert Hollings, of How Caple, Ross, Herefordshire.

(Class generally commended.)

CLASS XI.—*To the owner of the best Bull, above one and not exceeding two years old.*

First prize, £25, to No. 168, Thomas Edwards, of Wintercot, Leominster, Herefordshire.

Second prize, £15, to No. 170, John Baldwin, of Luddington, Stratford-on-Avon, Warwickshire.

Third prize, Silver Medal, to No. 169, Edward Tanner, junior, of Hopton Castle, Aston-on-Clun, Salop.

Commended.—No. 178, George Pitt, of Chadnor Court, Dilwyn, Leominster, Herefordshire.

CLASS XII.—*To the owner of the best Bull-Calf, above six and not exceeding twelve months old.*

First prize, £10, to No. 188, Thomas Roberts, of Ivington Bury, Leominster, Herefordshire.

Second prize, £5, to No. 184, R. Harcourt Capper, of the Northgate, St. Weonard's, Ross, Herefordshire.

Third prize, Silver Medal, to No. 195, Edmund Wright, of Halston Hall, Oswestry, Salop.

Highly commended.—No. 194, Edmund Wright, of Halston Hall, Oswestry, Salop.

CLASS XIII.—*To the owner of the best Cow, above three years old.*

First prize, £20, to No. 205, William Perry, of St. Oswald, Cholstrey, Leominster, Herefordshire.

Second prize, £10, No. 213, Thomas Rea, of Westonbury, Pembridge, Herefordshire.

Third prize, Silver Medal, to No. 212, Thomas Duckham, of Baysham Court, Ross, Herefordshire.

Highly commended.—No. 206, Philip Turner, of The Leen, Pembridge, Herefordshire.

Commended.—No. 207, Robert Leyshon, of Island Farm, Bridgend,

Glamorganshire. No. 211, George Pitt, of Chadnor Court, Dilwyn, Leominster, Herefordshire.

Class XIV.—*To the owner of the best Heifer, in-milk or in-calf, not exceeding three years old.*

First prize, £15, to No. 223, William Tudge, of Adforton, Leintwardine, Herefordshire.

Second prize, £10, to No. 222, George Pitt, of Chadnor Court, Dilwyn, Leominster, Herefordshire.

Highly commended.—No. 221, Major-General the Hon. A. Nelson Hood, of Cumberland Lodge, Windsor, Berks.

Commended.—No. 215, Thomas Thomas, of St. Hilary, Cowbridge, Glamorganshire. No. 219, John Williams, of St. Mary's, Kingsland, Leominster, Herefordshire.

Class XV.—*To the owner of the best Yearling Heifer.*

First prize, £15, to No. 238, John Monkhouse, of the Stow, Hereford.

Second prize, £10, to No. 231, Thomas Roberts, of Ivington Bury, Leominster, Herefordshire.

Third prize, Silver Medal, to No. 229, William Perry, of St. Oswald, Cholstrey, Leominster, Herefordshire.

Highly commended.—No. 236, The Hon. Thomas Henry Noel Hill, of Berrington, Shrewsbury.

Class XVI.—*To the owner of the best Heifer-Calf, above six and under twelve months old.*

First prize, £10, to No. 244, Thomas Roberts, of Ivington Bury, Leominster, Herefordshire.

Second Prize, £5, to No. 247, A. J. Rouse Boughton Knight, of Downton Castle, Ludlow, Herefordshire.

Commended.—No. 243, William Perry, of St. Oswald, Leominster, Herefordshire.

DEVON.

Class XVII.—*To the owner of the best Bull, above three and not exceeding six years old.*

First prize, £25, to No. 253, Samuel P. Newbery, of Scruel Barton, Honiton, Devon.

Second prize, £15, to No. 250, Walter Farthing, of Stowey Court, Bridgwater, Somerset.

Class XVIII.—*To the owner of the best Bull, above two and not exceeding three years old.*

First prize, £25, to No. 254, J. S. Surman, of Swindon Hall, Cheltenham, Gloucestershire.

Second prize, £15, to No. 255, James Merson, of Brinsworthy, North Molton, Devon.

(Only two exhibited.)

Class XIX.—*To the owner of the best Bull, above one and not exceeding two years old.*

First prize, £25, to No. 258, Major-General the Hon. A. Nelson Hood, of Cumberland Lodge, Windsor.

Second prize, £15, to No. 264, John Azariah Smith, of Bradford Peverell, Dorchester, Dorset.

Commended.—No. 257, Charles Frederick Perkins, of the Grange, Kingston, Taunton, Somersetshire.

CLASS XX.—*To the owner of the best Bull-Calf, above six and not exceeding twelve months old.*

First prize, £10, to No. 270, George Turner, of Beacon Downes, Exeter, Devon.

Second prize, £5, to No. 268, Walter Farthing, of Stowey Court, Bridgwater, Somerset.

Commended.—No. 265, James Wentworth Buller, M.P., of Downes, Crediton, Devon. No. 269, George Turner, of Beacon Downes, Exeter, Devon.

CLASS XXI.—*To the owner of the best Cow, above three years old.*

First prize, £20, to No. 277, John Azariah Smith, of Bradford Peverell, Dorchester, Dorset.

Second prize, £10, to No. 274, Walter Farthing, of Stowey Court, Bridgwater, Somerset.

Highly commended.—No. 271, Major-General the Hon. A. Nelson Hood, of Cumberland Lodge, Windsor. No. 276, John Azariah Smith, of Bradford Peverell, Dorchester, Dorset. No. 272, Major-General the Hon. A. Nelson Hood, of Cumberland Lodge, Windsor, Berks. No. 273, George Turner, of Beacon Downes, Exeter, Devon.

Commended.—No. 275, John Azariah Smith, of Bradford Peverell, Dorchester, Dorset.

(The Class generally commended.)

CLASS XXII.—*To the owner of the best Heifer, in-milk or in-calf, not exceeding three years old.*

First prize, £15, to No. 280, Charles Hambro, of Milton Abbey, Blandford, Dorset.

Second prize, £10, to No. 281, Walter Farthing, of Stowey Court, Bridgwater, Somerset.

Commended.—No. 278, Charles Frederick Perkins, of The Grange, Kingston, Taunton, Somerset.

CLASS XXIII.—*To the owner of the best Yearling Heifer.*

First prize, £15, to No. 288, James Wentworth Buller, M.P., Downes, Crediton, Devon.

Second prize, £10, to No. 285, George Turner, of Beacon Downes, Exeter, Devon.

Commended.—No. 286, Edward Pope, of Great Toller, Maiden Newton, Dorset. No. 287, James John Farquharson, of Langton House, Blandford, Dorset.

CLASS XXIV.—*To the owner of the best Heifer-Calf, above six and under twelve months old.*

First prize, £10, to No. 293, Major-General the Hon. A. Nelson Hood, of Cumberland Lodge, Windsor, Berks.

Second prize, £5, to No. 295, George Turner, of Beacon Downes, Exeter, Devon.

Highly commended.—No. 294, Major-General the Hon. A. Nelson Hood, of Cumberland Lodge, Windsor, Berks. No. 298, James John Farquharson, of Langton House, Blandford, Dorset.

SUSSEX.

CLASS XXV.—*To the owner of the best Bull, above two and not exceeding six years old.*

First prize, £10, to No. 302, William Marshall, of Bolney Place, Cuckfield, Sussex.

Second prize, £5, to No. 301, John and Alfred Heasman, of Angmering, Arundel, Sussex.

Commended.—No. 300, Edward Cane, of Berwick Court, Lewes, Sussex.

Class XXVI.—*To the owner of the best Bull, above one and not exceeding two years old.*

First prize, £10, to No. 303, John and Alfred Heasman, of Angmering, Arundel, Sussex.

(Second prize—no entry.)

Class XXVII.—*To the owner of the best Cow, above three years old.*

First prize, £10, to No. 305, Tilden Smith, of Knell, Beckley, Staplehurst, Sussex.

Second prize, £5, to No. 307, John and Alfred Heasman, of Angmering, Arundel, Sussex.

Highly commended.—No. 304, Edward Cane, of Berwick Court, Lewes, Sussex.

Commended.—No. 306, Tilden Smith, of Knell, Beckley, Staplehurst, Sussex.

Class XXVIII.—*To the owner of the best Heifer, in-milk or in-calf, not exceeding three years old.*

First prize, £10, to No. 308, John and Alfred Heasman, of Angmering, Arundel, Sussex.

(Second prize—no entry.)

Class XXIX.—*To the owner of the best Yearling Heifer.*

First prize, £10, to No. 310, John and Alfred Heasman, of Angmering, Arundel, Sussex.

Second prize, £5, to No. 311, George Jenner, of Parsonage House, Udimore, Rye, Sussex.

OTHER ESTABLISHED BREEDS.

Not including the Short-horn, Hereford, Devon, or Sussex Breeds.

Class XXX.—*To the owner of the best Bull, above two and not exceeding six years old.*

First prize, £10, to No. 317, James Davis, of Melcombe Horsey, Dorchester, Dorset.

Second prize, £5, to No. 320, The Hon. Colonel E. G. D. Pennant, M.P., of Penrhyn Castle, Bangor, Carnarvonshire.

Third prize, Silver Medal, to No. 322, James Dumbrell, of Ditchling, Hurstpierpoint, Sussex.

Commended.—No. 361. Sir Edward Kerrison, Bart, M.P., of Brome Hall, Scole, Suffolk.

Class XXXI.—*To the owner of the best Bull, above one and not exceeding two years old.*

First prize, £10, to No. 324, Sir Willoughby Jones, Bart., M.P., of Cranmer Hall, Fakenham, Norfolk.

Second prize, £5, to No. 327, Henry Le Fenmore, of Les Mièmes, St. Peter's, Jersey.

Class XXXII.—*To the owner of the best Cow, above three years old.*

First prize, £10, to No. 334, Sir Edward Kerrison, Bart., M.P., of Brome Hall, Scole, Suffolk.

Second prize, £5, to No. 330, Sir Willoughby Jones, Bart., M.P., of Cranmer Hall, Fakenham, Norfolk.

Third prize, Silver Medal, to No. 331, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

Highly commended.—No. 332, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

Commended.—No. 336, The Hon. Colonel E. G. D. Pennant, M.P., Penrhyn Castle, Bangor, Carnarvonshire. No. 339, Richard Cowan, of Swissville, St. Peter Port, Guernsey. No. 347, The Rev. James Hunter Gandy, of Rectory, Castle Eaton, Fairford, Wiltshire. No. 349, Albert le Gallais, of La Moie House, St. Aubin's, Jersey. No. 352, James Dumbrell, of Ditchling, Hurstpierpoint, Sussex.

Class XXXIII.—*To the owner of the best Heifer, in-milk or in-calf, not exceeding three years old.*

First prize, £10, to No. 355, Sir Edward Kerrison, Bart., M.P., of Brome Hall, Scole, Suffolk.

Second prize, £5, to No. 353, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

Third prize, Silver Medal, No. 369, Albert le Gallais, of La Moie House, St. Aubin's, Jersey.

Highly commended.—No. 356, Sir Edward Kerrison, Bart., M.P., of Brome Hall, Scole, Suffolk. No. 368, Albert le Gallais, of La Moie House, St. Aubin's, Jersey.

Commended.—No. 354, Lord Sondes, of Elmham Hall, Thetford, Norfolk. No. 357, The Earl of Powis, of Powis Castle, Welshpool, Montgomeryshire.

Class XXXIV.—*To the owner of the best Yearling Heifer.*

First prize, £10, to No. 378, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

Second prize, £5, to No. 379, Lord Sondes, of Elmham Hall, Thetford, Norfolk.

Third prize, Silver Medal, to No. 376, Sir Willoughby Jones, Bart., M.P., of Cranmer Hall, Fakenham, Norfolk.

Highly commended.—No. 380, Sir Edward Kerrison, Bart., M.P., of Brome Hall, Scole, Suffolk.

HORSES.

Class XXXV.—*To the owner of the best Thorough-bred Stud Horse, having served Mares during the season* 1863, *which in the opinion of the Judges is best calculated to improve and perpetuate the breed of the sound and stout Thorough-bred Horse, for General Stud purposes.*

First prize, £100, to No. 391, William Gulliver, of Swalcliff, Banbury, Oxfordshire.

Second prize, £25, to No. 390, Edward George Simpson, of Levent Bridge, Yarm, Yorkshire.

Third prize, Silver Medal, to No. 393. Henry Richard Phillips, of Wilesden Paddocks, Kilburn, Middlesex.

(Class highly commended.)

HUNTER AND HACKNEY.

Class XXXVI.—*To the owner of the best Stallion, suitable for getting Hunters.*

First prize, £25, to No. 400, to William Barnett, of Bays Hill Lawn, Cheltenham, Gloucestershire.

Second prize, £15, to No. 416, John Batty, of Mains Farm, Ripon, Yorkshire.

Third prize, Silver Medal, to No. 418, William Watson, of The Beauthorns, Cheltenham, Gloucestershire.

Class XXXVII.—*To the owner of the best Brood Mare, with foal at foot, or in-foal, for breeding Hunters.*

First prize, £15, to No. 430, John Watson, of Waresley, Kidderminster, Worcestershire.

Second prize, £10, to No. 419, Edmund Nicholas Heygate, of Buckland, Leominster, Herefordshire.

Third prize, Silver Medal, to No. 432, Andrew Rouse Boughton Knight, of Downton Castle, Ludlow, Herefordshire.

Commended.—No. 420, James Gregg, of Fencote, Docklow, Leominster, Herefordshire.

Class XXXVIII.—*To the owner of the best Brood Mare, with foal at foot, or in-foal, for breeding Hackneys.*

First prize, £15, to No. 434, Hugh Percy, of Eskrigg, Wigton, Cumberland.

Second prize, £10, to No. 436, Samuel Walker, Urwick, of Leinthall, Ludlow, Herefordshire.

PONIES.

Class XXXIX.—*To the owner of the best Stallion, not exceeding* 14 *hands.*

First prize, £15, to No. 442, James Moffit, of Kirklinton Park, Carlisle, Cumberland.

Second prize, £5, to No. 340, Silvanus Edwards, of Middleton Priors, Bridgnorth, Salop.

Commended.—No. 439, William Narman, of Aspatria, Carlisle, Cumberland.

Class XL.—*To the owner of the best Mare, not exceeding* 14 *hands.*

First prize, £10, to No. 446, Frederick Branwhite, of Chapel House, Long Melford, Sudbury, Suffolk.

Second prize, £5, to No. 448, Thomas Fulcher, of Elmham, Thetford, Norfolk.

Third prize, Silver Medal, to No. 454, John Knight, of Marlborough House, Newbury, Berkshire.

AGRICULTURAL AND DRAY HORSES.

AGRICULTURAL.

Not qualified to compete as Suffolk.

Class XLI.—*To the owner of the best Stallion, foaled before the 1st of January,* 1861.

First prize, £25, to No. 470, Joseph Yeomans, of Pennymore Hay, Shareshill, Staffordshire.

Second prize, £10, to No. 466, William Raine, of Morton Tinmouth, Darlington, Co. Durham.

Third prize, Silver Medal, to No. 461, The Duke of Marlborough, of Blenheim Palace, Woodstock, Oxford.

Class XLII.—*To the owner of the best Stallion, foaled in the year* 1861.

First prize, £20, to No. 473, William Coney, of Battenhall, Worcester.

Second prize, £10, to No. 472, William Coney, of Battenhall, Worcester.

Third prize, Silver Medal, to No. 478, Edward Holland, M.P., of Dumbleton Hall, Evesham, Gloucestershire.

CLASS XLIII.—*To the owner of the best Mare and Foal.*

First prize, £20, to No. 489, Elizabeth Bull, Weobley, Hereford.

Second prize, £10, to No. 485, James Corbett, of Coventry Arms, Croome, Kempsey, Worcestershire.

Third prize, Silver Medal, to No. 490, Edmund Herbert, of Powick, Worcester.

CLASS XLIV.—*To the owner of the best Two-years-old Filly.*

First prize, £15, to No. 499, Charles Priday, of Longford, Gloucester.

Second prize, £10, to No. 497, Hon. Col. E. G. D. Pennant, M.P., of Penrhyn Castle, Bangor, Carnarvonshire.

DRAY.

CLASS XLV.—*To the owner of the best Stallion, foaled before the 1st of January*, 1861.

First prize, £25, to No. 504, Thomas Johnson, of Hatfield, Doncaster, Yorkshire.

Second prize, £10, to No. 503, William Henry Neale, of Old Eclipse Inn, Mansfield, Notts.

CLASS XLVI.—*To the owner of the best Stallion, foaled in the year* 1861.

First prize, £20, to No. 506, Charles Morrison, of Basildin Park, Reading, Berks.

Second prize, £10, to No. 505, James Abell, of Leopard Grange, Worcester.

CLASS XLVII.—*To the owner of the best Mare and Foal.*

First prize, £20, to No. 509, George Hasell, of Barton Hill, Bristol, Gloucestershire.

CLASS XLVIII.—*To the owner af the best Two-years-old Filly.*

No entry.

SUFFOLK

CLASS XLIX.—*To the owner of the best Stallion, foaled before the 1st of January*, 1861.

First prize, £20, to No. 510, Walter Garrett Roofe, of East Stockwell Street, Colchester, Essex.

(Only one shown.)

CLASS L.—*To the owner of the best Stallion, foaled in the year* 1861.

First prize, £15, to No. 516, Morris Mumford, of Creeting St. Peter, Needham Market, Suffolk.

Second prize, £10, to No. 512, Isaac Rist, of Tattingstone, Ipswich, Suffolk.

Highly commended.—No. 511, William Wilson, of Baylham Hall, Ipswich, Suffolk.

CLASS LI.—*To the owner of the best Mare and Foal.*

First prize, £20, to No. 521, Sir Edward Kerrison, Bart., M.P., of Brome Hall, Scole, Suffolk.

(Only one shown.)

CLASS LII.—*To the owner of the best Two-years-old Filly.*

First prize, £15, to No. 528, John Ward, of East Mersea, Colchester, Essex.

Second prize, £10, to No. 525, Manfred Biddell, of Playford, Ipswich, Suffolk.

SHEEP.

LEICESTER.

Class LIII.—*To the owner of the best Shearling Ram.*

First prize, £20, to No. 545, Lieut.-Col. William Inge, of Thorpe Constantine, Tamworth, Staffordshire.

Second prize, £10, to No. 554, William Sanday, of Holme Pierrepont, Nottingham.

Third prize, Silver Medal, to No. 556, William Sanday, of Holme Pierrepont, Nottingham.

Highly commended.—No. 555, William Sanday, of Holme Pierrepont, Nottingham. No. 559, John Borton, of Barton House, Barton-le-Street, Malton, Yorkshire.

Commended.—No. 546, Lieut.-Col. William Inge, of Thorpe Constantine, Tamworth, Staffordshire. No. 558, William Sanday, of Holme Pierrepont, Nottingham. No. 568, Francis Spencer, of Alma House, Claybrooke Magna, Lutterworth, Leicestershire.

Class LIV.—*To the owner of the best Ram of any other age.*

First prize, £20, to No. 586, John Borton, of Barton House, Barton-le-Street, Malton, Yorkshire.

Second prize, £10, to No. 588, John Borton, of Barton House, Barton-le-Street, Malton, Yorkshire.

Third prize, Silver Medal, to No. 587, John Borton, of Barton House, Barton-le-Street, Malton, Yorkshire.

Highly commended.—No. 591, Robert Ward Creswell, of Ravenstone, Ashby-de-la-Zouch, Leicestershire.

Commended.—No. 593, Robert Ward Creswell, of Ravenstone, Ashby-de-la-Zouch, Leicestershire.

Class LV.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize, £15, to No. 596, Lieut.-Col. William Inge, Thorpe Constantine, Tamworth, Staffordshire.

Second prize, £10, to No. 599, William Sanday, of Holme Pierrepont, Nottingham.

Highly commended.—No. 600, William Sanday, of Holme Pierrepont, Nottingham.

Commended.—No. 597, Lieut.-Col. William Inge, Thorpe Constantine, Tamworth, Staffordshire.

COTSWOLD.

Class LVI.—*To the owner of the best Shearling Ram.*

First prize, £20, to No. 638, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Second prize, £10, to No. 636, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Third prize, Silver Medal, to No. 635, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Class LVII.—*To the owner of the best Ram of any other age.*

First prize, £20, to No. 667, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Second prize, £10, to No. 656, Thomas Beale Browne, of Salperton Park, Andoversford, Gloucestershire.

Third prize, Silver Medal, to No. 660, Edward Handy, of Sierford, Cheltenham, Gloucestershire.

(Class generally highly commended.)

Class LVIII.—*To the owner of the best Pen of Five Shearling Ewes of the same flock.*

First prize, £15, to No. 674, George Fletcher, of Shipton Sollars, Cheltenham, Gloucestershire.

Second prize, £10, to No. 677, William Lane, of Broadfield Farm, Northleach, Gloucestershire.

Third prize, Silver Medal, to No. 680, Robert Garne, of Aldsworth, Northleach, Gloucestershire.

Highly commended.—No. 675, George Fletcher, of Shipton Sollars, Cheltenham, Gloucestershire.

LINCOLN AND OTHER LONG-WOOLLED.

Not qualified to compete as Leicesters or Cotswold.

Class LIX.—*To the owner of the best Shearling Ram.*

First prize, £20, to No. 694, John Lynn, of Church Farm, Stroxton, Grantham, Lincolnshire.

Second prize, £10, to No. 689, Thomas Cartwright, of Dunston Pillar, Lincoln.

Third prize, Silver Medal, to No. 697, Joseph Simpson, of Spofforth Park, Wetherby, Yorkshire.

Highly commended.—No. 691, Clarke Hales, of Bassingbourne, Royston, Cambridgeshire.

Class LX.—*To the owner of the best Ram of any other age.*

First prize, £20, to No. 704, John Lynn, of Church Farm, Stroxton, Grantham, Lincolnshire.

Second prize, £10, to No. 705, John Lynn, of Church Farm, Stroxton, Grantham, Lincolnshire.

Third prize, Silver Medal, to No. 700, Thomas Bumpstead Marshall, of Branston, Lincoln.

Highly commended.—No. 709, Joseph Simpson, of Spofforth Park, Wetherby, Yorkshire.

Class LXI.—*To the owner of the best Pen of Five Shearling Ewes of the same flock.*

First prize, £15, to No. 715, Robert George Frederick Howard, of Temple Bruer, Lincoln.

Second prize, £10, to No. 712, Thomas Bumpstead Marshall, of Branston, Lincoln.

Highly commended.—No. 714, Robert George Frederick Howard, of Temple Bruer, Lincoln.

OXFORDSHIRE DOWNS.

Class LXII.—*To the owner of the best Shearling Ram.*

First prize, £20, to No. 737, John Bryan, of Southleigh, Witney, Oxon.

Second prize, £10, to No. 746, Charles Gillett, of Cote House, Bampton, Faringdon, Oxon.

Third prize, Silver Medal, to No. 728, Joseph Druce, of Eynsham, Oxford.

Highly commended.—No. 744, Charles Gillett, of Cote House, Bampton, Faringdon, Oxon.

Commended.—No. 718, George Wallis, of Old Shifford, Bampton, Faringdon, Oxon. No. 750. George Henry Barnett, of Glympton Park, Woodstock, Oxon.

Class LXIII.—*To the owner of the best Ram of any other age.*

First prize, £20, to No. 757, George Wallis, of Old Shifford, Bampton, Faringdon, Oxon.

Second prize, £10, to No. 75 , George Wallis, of Old Shifford, Bampton, Faringdon, Oxon.

Third prize, Silver Medal, to No. 755, George Wallis, of Old Shifford, Bampton, Faringdon, Oxon.

Commended.—No. 763, George Henry Barnett, of Glympton Park, Woodstock, Oxon.

Class LXIV.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize, £15, to No. 772, Charles Gillett, of Cote House, Bampton, Faringdon, Oxon.

Second prize, £10, to No. 768, The Duke of Marlborough, of Blenheim Palace, Woodstock, Oxon.

Highly commended.—No. 773, Charles Gillett, of Cote House, Bampton, Faringdon, Oxon.

Commended.—No. 770, Charles Howard, of Biddenham, Bedford. No. 771, Charles Gillett, of Cote House, Bampton, Faringdon, Oxon.

SOUTH-DOWN.

Class LXV.—*To the owner of the best Shearling Ram.*

First prize, £20, to No. 796, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Second prize, £10, to No. 799, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Third prize, Silver Medal, to No. 801, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Highly commended.—No. 798, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Commended.—No. 802, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Class LXVI.—*To the owner of the best Ram of any other age.*

First prize, £20, to No. 832, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Second prize, £10, to No. 830, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Third prize, Silver Medal, to No. 829, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Highly commended.—No. 831, Lord Walsingham, of Merton Hall, Thetford, Norfolk. No. 828, Lord Walsingham, of Merton Hall, Thetford, Norfolk. No. 811, William Rigden, of Hove, Brighton, Sussex.

Commended.—No. 834, The Earl of Radnor, of Coleshill, Highworth, Wilts.

Class LXVII.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize, £15, to No. 841, Lord Walsingham, of Merton Hall, Thetford, Norfolk.

Second prize, £10, to No. 838, John and Alfred Heasman, of Angmering, Arundel, Sussex.

Third prize, Silver Medal, to No. 845, James John Farquharson, of Langton House, Blandford, Dorset.

Highly commended.—No. 843, The Earl of Radnor, of Coleshill, Highworth, Wilts. No. 836, The Duke of Richmond, of Goodwood, Chichester, Sussex.

SHROPSHIRE.

Class LXVIII.—*To the owner of the best Shearling Ram.*

First prize, £20, to No. 882, John Stubbs, of Weston Hall, Stafford.

Second prize, £10, to No. 868, Thomas Horton, of Harnage Grange, Shrewsbury, Salop

Third prize, Silver Medal, to No. 866, Thomas Horton, of Harnage Grange, Shrewsbury, Salop.

Highly commended (specially).—No. 895, William Orme Foster, of Kinver Hill Farm, Stourbridge, Worcestershire.

Highly commended.—No. 865, Pryce William Bowen, of Shrawardine, Shrewsbury, Shropshire. No. 885, James and Edward Crane, of Shrawardine, Shrewsbury, Salop. No. 888, James and Edward Crane, of Shrawardine, Shrewsbury, Salop. No. 894, William Orme Foster, of Kinver Hill Farm, Stourbridge, Worcestershire. No. 908, William Goodwin Preece, of Shrewsbury, Salop.

Commended.—No. 864, Pryce William Bowen, of Shrawardine Castle, Shrewsbury, Shropshire. No. 884, James and Edward Crane, of Shrawardine, Shrewsbury, Salop.

Class LXIX.—*To the owner of the best Ram of any other age.*

First prize, £20, to No. 923, Pryce William Bowen, of Shrawardine Castle, Shrewsbury, Salop.

Second prize, £10, to No. 918, Colonel Dyott, of Freeford Hall, Lichfield, Staffordshire.

Third prize, Silver Medal, to No. 917, John Coxon, of Freeford, Lichfield, Staffordshire.

Highly commended.—No. 922, Robert Hanbury Masfen, of Pendeford, Wolverhampton, Staffs.

Commended.—No. 914, Lord Wenlock, of Bourton Cottage, Much Wenlock, Salop. No. 919, Thomas Horley, Jun., of The Fosse, Leamington, Warwickshire.

Class LXX.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize, £15, to No. 932, James and Edward Crane, of Shrawardine, Shrewsbury, Salop.

Second prize, £10, to No. 931, James and Edward Crane, of Shrawardine, Shrewsbury, Salop.

Third prize, Silver Medal, to No. 936, Henry Matthews, of Montford, Shrewsbury, Salop.

Highly commended—No. 938, John Hanbury Blackburne, of Pipe Place, Lichfield, Staffordshire. No. 934, William Orme Foster, of Kinver Hill Farm, Stourbridge, Worcestershire.

Commended.—No. 930, Colonel Dyott, of Freeford Hall, Lichfield, Staffs. No. 935, The Earl of Dartmouth, of Patshull, Albrighton, Wolverhampton, Staffordshire.

HAMPSHIRE AND OTHER SHORT-WOOLLED.

Not qualified to compete as South-Downs or Shropshires.

CLASS LXXI.—*To the owner of the best Shearling Ram.*

First prize, £20, to No. 946, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berkshire.

Second prize, £10, to No. 947, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berkshire.

Third prize, Silver Medal, to No. 942, William Browne Canning, of Elston Hill, Devizes, Wiltshire.

Commended.—No. 948, James Rawlence, of Bulbridge, Wilton, Salisbury, Wiltshire.

CLASS LXXII.—*To the owner of the best Ram of any other age.*

First prize, £20, to No. 952, James Rawlence, of Bulbridge, Wilton, Salisbury, Wiltshire.

Second prize, £10, to No. 955, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berkshire.

Highly commended.—No. 954, William Humfrey, of Oak Ash, Chaddleworth, Wantage, Berkshire.

Commended.—No. 953, William Browne Canning, of Elston Hill, Devizes, Wiltshire.

CLASS LXXIII.—*To the owner of the best Pen of Five Shearling Ewes, of the same flock.*

First prize, £15, to No. 961, James Rawlence, of Bulbridge, Wilton, Salisbury, Wiltshire.

Second prize, £10, to No. 959, James Rawlence, of Bulbridge, Wilton, Salisbury, Wiltshire.

Highly commended (specially).—No. 960, James Rawlence, of Bulbridge, Wilton, Salisbury, Wiltshire.

Highly commended.—No. 956, William Rowden Shittler, of Bishopston, Salisbury, Wiltshire. No. 958, Stephen King, of Brockhampton, Lambourne, Berkshire. No. 962, William Browne Canning, of Elston Hill, Devizes, Wiltshire. No. 963, William Humfrey, of Oak House, Chaddleworth, Wantage, Berkshire.

PIGS.

CLASS LXXIV.—*To the owner of the best Boar of a large breed, of any colour.*

First prize, £10, to No. 964, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

Second prize, £5, to No. 967, Richard Dickin, of 161, Old Road, Stockport, Lancashire.

CLASS LXXV.—*To the owner of the best Boar of a small white breed.*

First prize, £10, to No. 969, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

Second prize, £5, to No. 977, Robert Berkeley, of Spetchley Park, Worcester.

Third prize, Silver Medal, to No. 974, George Mangles, of Givendale, Ripon, Yorkshire.

Highly commended.—No. 975, George Mangles, of Givendale, Ripon, Yorkshire.

Commended.—No. 981, Thomas Rea, of Westonbury, Pembridge, Herefordshire.

CLASS LXXVI.—*To the owner of the best Boar of a small black breed.*

First prize, £10, to No. 989, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Second prize, £5, to No. 986, George Mumford Sexton, of Wherstead Hall, Ipswich, Suffolk.

Highly commended.—No. 988, George Mumford Sexton, of Wherstead Hall, Ipswich, Suffolk.

CLASS LXXVII.—*To the owner of the best Boar of the Berkshire breed.*

First prize, £10, to No. 1002, William Hewer, of Sevenhampton, Highworth, Wiltshire.

Second prize, £5, to No. 1001, William Hewer, of Sevenhampton, Highworth, Wiltshire.

Third prize, Silver Medal, to No. 1005, William Joyce, of Abbey Farm, Waterford, Ireland.

Highly commended.—No. 1006, William Joyce, of Abbey Farm, Waterford, Ireland. No. 999, William Hewer, of Sevenhampton, Highworth, Wiltshire. No. 1000, William Hewer, of Sevenhampton, Highworth, Wiltshire.

Commended, No. 992, Joseph Smith, of Henley-in-Aden, Warwickshire. No. 1004, William Joyce, of Abbey Farm, Waterford, Ireland. No. 1008, William Joyce, of Abbey Farm, Waterford, Ireland.

CLASS LXXVIII.—*To the owner of the best Boar of a breed not eligible for the preceding classes.*

First prize, £10, to No. 1015, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

Second prize, £5, to No. 1020, James Graham, of 1, Blackburn's Buildings, York Road, Leeds.

Highly Commended.—No. 1014, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

CLASS LXXIX.—*To the owner of the best Breeding Sow of a large breed, of any colour.*

First prize, £10, to No. 1021, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

Second prize, £5, to No. 1022, Richard Dickin, of 161, Old Road, Stockport, Lancashire.

CLASS LXXX.—*To the owner of the best Breeding Sow of a small white breed.*

First prize, £10, to No. 1041, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Second prize, £5, to No. 1043, Sir Edward Kerrison, Bart., M.P., of Brome Hall, Scole, Suffolk.

Third prize, Silver Medal, to No. 1039, Samuel Geater Stearn, of Brandeston, Wickham Market, Suffolk.

Highly commended.—No. 1028, William Bradley Wainman, of Carhead, Crosshills, Yorkshire. No. 1034, Michael Gavins, of Fox Inn, Leeds, Yorkshire. No. 1035, The Earl of Radnor, of Coleshill, Highworth, Wiltshire.

Commended.—No. 1038, Samuel Geater Stearn, of Brandeston, Wickham Market, Suffolk.

CLASS LXXXI.—*To the owner of the best breeding Sow of a small black breed.*

First prize, £10, to No. 1059, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Second prize, £5, to No. 1051, George Mumford Sexton, of Wherstead Hall, Ipswich, Suffolk.

Third prize, Silver Medal, to No. 1057, William Hemming, of Caldicott, Moreton-in-Marsh, Gloucestershire.

Highly commended.—No. 1058, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Class LXXXII.—*To the owner of the best breeding sow of the Berkshire breed.*

First prize, £10, to No. 1064, William James Sadler, of Bentham, Calcutt, Cricklade, Wiltshire.

Second prize, £5, to No. 1062, John Hichman, M.D., of Mickleover, Derby.

Third prize, Silver Medal, to No. 1071, Royal Agricultural College, Cirencester, Gloucestershire.

Highly commended.—No. 1061, Arthur Stewart, of St. Bridge Farm, Gloucester. No. 1065, George Mander Allender, of Lee Grange, Winslow, Bucks.

(The Class commended.)

Class LXXXIII.—*To the owner of the best Breeding Sow of a breed not eligible for the preceding classes.*

First prize, £10, to No. 1081, Thomas Crisp, of Butley Abbey, Wickham Market, Suffolk.

Second prize, £5, to No. 1076, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

Third prize, Silver Medal, to No. 1077, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

Class LXXXIV.—*To the owner of the best Pen of Three Breeding Sow Pigs of a large breed, of any colour, of the same litter, above four and under eight months old.*

First prize, £10, to No. 1087, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

Second prize, £5, to No. 1088, Richard Elmhurst, Duckering, of Northorpe Station, Kirton Lindsey, Lincolnshire.

Class LXXXV.—*To the owner of the best Pen of Three Breeding Sow Pigs of a small white breed, of the same litter, above four and under eight months old.*

First prize, £10, to No. 1091, John Waters, of Motcombe, Eastbourne, Sussex.

Second prize, £5, to No. 1093, The Hon. Colonel E. G. D. Pennant, M.P., of Penrhyn Castle, Bangor, Carnarvonshire.

Highly commended.—No. 1092, Major-General the Hon. A. Nelson Hood, of Cumberland Lodge, Windsor, Berkshire.

Class LXXXVI.—*To the owner of the best Pen of Three Breeding Sow Pigs of a small black breed, of the same litter, above four and under eight months old.*

First prize, £10, to No. 1095, George Mumford Sexton, of Wherstead Hall, Ipswich, Suffolk.

Second prize, £5, to No. 1097, William Hemming of Caldicott, Moreton-in-Marsh, Gloucestershire.

Class LXXXVII.—*To the owner of the best Pen of Three Breeding Sow Pigs of the Berkshire breed, of the same litter, above four and under eight months old.*

First prize, £10, to No. 1107, William Joyce, of Abbey Farm, Waterford, Ireland.

Second prize, £5, to No. 1098, Joseph Smith, of Henley-in-Arden, Warwickshire.

Third prize, Silver Medal, to No. 1099, William James Sadler, of Bentham, Calcutt, Cricklade, Wiltshire.

Class LXXXVIII.—*To the owner of the best Pen of Three Breeding Sow Pigs of a breed not eligible for the preceding classes, of the same litter, above four and under eight months old.*

First prize, £10, to No. 1110, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

Second prize, £5, to No. 1111, Henry Keyworth, of Woodhouse Moor, Leeds, Yorkshire.

CATTLE.

SHORT-HORNED.

Class LXXXIX.—*To the owner of the best Pair of Cows, in-milk, exceeding four years old.*

First prize, £15, to No. 1114, Richard Booth, of Warlaby, Northallerton, Yorkshire.

Second prize, £5, to No. 1113, James Haughton Langston, M.P., of Sarsden House, Chipping Norton, Oxfordshire.

Class XC.—*To the owner of the best Pair of Heifers, in-milk and in-calf, not exceeding four years old.*

First prize, £15, to No. 1117, John R. Middlebrough, of South Milford, Milford Junction, Yorkshire.

Second prize, £5, to No. 1118, William Bradburn, of Hilton, Wolverhampton, Staffordshire.

Class XCI.—*To the owner of the best Pair of Heifers, in-calf, not exceeding three years old.*

First prize, £15, to No. 1120, Richard Booth, of Warlaby, Northallerton, Yorkshire.

Second prize, £5, to No. 1121, Earl Beauchamp, of Madresfield Court, Great Malvern, Worcestershire.

Class XCII.—*To the owner of the best Pair of Yearling Heifers.*

Prize, £10, to No. 1122, Colonel Charles Towneley, of Towneley Park, Burley, Lancashire.

Class XCIII.—*To the owner of the best Bull, Cow, and their offspring, the latter not exceeding twelve months old on the 1st of July, 1863; the Cow bred by the exhibitor.*

First prize, £20, to No. 1124, Richard Stratton, of Walls Court, Stapleton, Bristol.

Second prize, £10, to No. 1123, James Haughton Langston, of Sarsden House, Chipping Norton, Oxfordshire.

HEREFORD.

Class XCIV.—*To the owner of the best Pair of Cows, in-milk, exceeding four years old.*

First prize, £15, to No. 1127, John Walker, of Westfield House, Holmer, Herefordshire.

Second prize, £5, to No. 1126, Philip Turner, of The Leen, Pembridge, Herefordshire.

Commended.—No. 1128, George Pitt, of Chadnor Court, Dilwyn, Leominster, Herefordshire.

Class XCV.—*To the owner of the best Pair of Heifers, in-milk or in-calf, not exceeding four years old.*

First prize, £15, to No. 1131, The Executors of the late James Rea, of Monaughty, Knighton, Radnorshire.

Second prize, £5, to No. 1130, Henry Rawlins Evans, jun., of Swanstone Court, Dilwyn, Leominster, Herefordshire.

Class XCVI.—*To the owner of the best Pair of Heifers, in-calf, not exceeding three years old.*

No entry.

Class XCVII.—*To the owner of the best Pair of Yearling Heifers.*

No entry.

Class XCVIII.—*To the owner of the best Bull, Cow, and their offspring, the latter not exceeding twelve months old on the 1st July, 1863; the Cow bred by the exhibitor.*

First prize, £20, to No. 1135, Thomas Roberts, of Ivington Bury, Leominster, Herefordshire.

Second prize, £10, to No. 1137, Henry Gibbons, of Hampton Bishop, Hereford.

PEMBROKE.

Class XCIX.—*To the owner of the best Bull, and a Cow in-milk.*

No entry.

Class C.—*To the owner of the best Bull, and a Cow in-milk, of any other Welsh breed.*

First prize, £10, to No. 1138, Richard Hart Harvey, of Harroldstone, Haverfordwest.

Second prize—no entry.

SCOTCH.

Class CI.—*To the owner of the best Bull, and a Cow in-milk, of any pure Scotch breed.*

First prize, £10, to No. 1139, The Earl of Powis, of Powis Castle, Welshpool, Montgomeryshire.

Second prize—no entry.

HORSES.

HUNTER AND HACKNEY.

Class CII.—*To the owner of the best Mare or Gelding, exceeding four years old, in the opinion of the judges equal to 15 stone with hounds.*

First prize, £20, to No. 1157, John B. Booth, of Killerby, Catterick, Yorkshire.

Second prize, £10, to No. 1143, John Gregory Watkins, of Woodfield, Droitwich.

Highly commended.—No. 1144, John Gregory Watkins, of Woodfield, Droitwich. No. 1150, William Henry Jones, of Canon Bridge, Hereford.

(Class generally commended.)

CLASS CIII.—*To the owner of the best Filly or Gelding, three years old, likely to make a hunter or carriage horse.*

First prize, £10, to No. 1171, Henry James Sheldon, of Brailes House, Shipston-on-Stour, Warwickshire.

Second prize, £5, to No. 1172, James White, of Lindoes, Coleford, Gloucestershire.

CLASS CIV.—*To the owner of the best Filly or Gelding, two years old, likely to make a hunter or carriage horse.*

First prize, £10, to No. 1179, William Baker, of Brailes, Shipston-on-Stour, Warwickshire.

Second prize, £5, to No. 1183, Henry Allsop, of Hindlip Hall, Worcester.

CLASS CV.—*To the owner of the best Cob, not exceeding* 15 *hands in height, or exceeding six years old.*

First prize, £10, to No. 1188, Frederick Branwhite, of Chapel House, Long Melford, Sudbury, Norfolk.

Second prize, £5, to No. 1189, Frederick Branwhite, of Chapel House, Long Melford, Sudbury, Norfolk.

AGRICULTURAL.

CLASS CVI.—*To the owner of the best Stallion (Suffolk breed only excluded), exceeding three years old and not exceeding seven years old.*

First prize, £40, to No. 1196, Joseph Miles, of Astwood Claines, Worcester.

Second prize, £20, to No. 1195, John Crump, of Grafton, Beckford, Tewkesbury, Gloucestershire.

SHEEP.

RYELAND.

CLASS CVII.—*To the owner of the best Yearling Ram.*

Prize, £10, to No. 1199, John Bearcroft Downing, of Holme Lacey, Hereford.

CLASS CVIII.—*To the owner of the best Pen of Five Theaves of the same flock.*

Prize, £10, to No. 1202, John Bearcroft Downing, of Holme Lacey, Hereford.

WELSH, OR ANY OTHER MOUNTAIN BREED.

CLASS CIX.—*To the owner of the best Two Shear Ram.*

Prize, £10, to No. 1205, Jonathan Peel, of Knowlmere Manor, Clitheroe.

CLASS CX.—*To the owner of the best Pen of Five Theaves, of the same flock.*

Prize, £10, to No. 1209, Jonathan Peel, of Knowlmere Manor, Clitheroe.

Highly commended.—No. 1208, Jonathan Peel, of Knowlmere Manor, Clitheroe.

PIGS.

LARGE BREED.

CLASS CXI.—*To the owner of the best Boar, Sow, and their Litter of Pigs, not exceeding six months old.*

First prize, £10, to No. 1212, William Bradley Wainman, of Carhead, Crosshills, Yorkshire.

SMALL BREED.

CLASS CXII.—*To the owner of the best Boar, Sow, and their Litter of Pigs, not exceeding six months old.*

First prize, £10, to No. 1216, Titus Bennett Stead, of 20, Upperhead Row, Leeds, Yorkshire.

Second prize, £5, to No. 1217, John Azariah Smith, of Bradford Peverell, Dorset.

Extracts from British and Foreign Journals.

VIVISECTION IN FRANCE.

(*From the 'Times' Correspondent.*)

PARIS, *August* 7, 1863.

THE vivisection of animals, carried to a great extent in France, professedly for the benefit of science, but in the majority of cases by mere students and by persons whose knowledge and acquirements are insufficient to guarantee any better result than the torture of the poor brutes subjected to their pitiless knives, has repeatedly attracted the attention and horror of scientific and humane men, and has been made the subject of their earnest remonstrances. The French Society for the Protection of Animals is zealous in its endeavours to obtain the restriction of such cruel practices to men competent to derive from them real advantages to humanity, and who, moreover, will pursue them only so far as such advantages are obtainable, and as their importance may be held to justify the sufferings inflicted. We find learned physicians and anatomists and eminent veterinary surgeons uplifting their voices and wielding their pens in opposition to the gross abuse of vivisection. Independently of its indisputable barbarity, one great objection to the practice is that the operator is likely to be misled by the results obtained. The same operations frequently elicit the most conflicting phenomena. A distinguished medical man, Dr. Roche, who does not absolutely oppose all experiments on living animals, has vigorously combated those from which torture is inseparable. He urges that the dissection of a live animal, the pitiless cutting into its flesh and shedding its blood, exciting it to the utmost fury or plunging it into the stupidity of profound anguish and terror, is a strange means of ascertaining in what manner the peaceful and regular functions of a

man in perfect, cheerful health are exercised. Physically, as well as morally, it is a fact that no reliance can be placed on the replies to questions addressed to one under the torture. With very rare exceptions—we have it on high medical authority—such experiments lead to fallacious results, fill the student's mind with doubts and uncertainties, and are far better left alone. This is the case even when the operator possesses sufficient knowledge to profit to the utmost by his cruel practices, productive of indescribable sufferings to the helpless creatures subjected to them. "It is for them," Dr. Fée has written, "a slow and despairing death, so much the more horrible that they cannot lose consciousness. Men faint away; an animal never faints, but expires in torments. Certainly, under skilful hands, sparing of the blood of animated beings, such deaths have borne fruits. But how many animals, immolated by the ignorant, have displayed their palpitating entrails to eyes that could not see, and to intelligences that could not understand." It has been urged that, if such experiments are to be made, it should be in the silence and retirement of the laboratory, and not in the dissecting school, before a crowd of spectators, as has been and is too frequently the case. By witnessing such cruelties the young and inexperienced become inured and tempted to practise them—without profit to themselves, and at double expense of suffering to the victims. It is related that when Dr. Ségalas was giving courses of physiology, the students (most of whom knew but little of human anatomy, while probably not one of them had a notion of comparative anatomy) used to steal dogs and entice cats into their lodgings, and repeat upon them the experiments they had witnessed the day before. An able medical writer, Dr. Bossu, has quite recently denounced the evil effect produced upon young men by familiarizing them with such cruelties. He declares that among the students who follow the lectures of the faculty there are many who cannot witness with impunity the shocking sight of an animal deprived of life slowly, methodically, and in the most cruel sufferings. Such an ignoble spectacle is calculated to pervert the generous sentiments of youth, and it is important that it should disappear. "If such things continue," adds the editor of the 'Medical Bee,'—

"Future physicians will bear the impress of a cold, implacable insensibility, a hundred times put to the test, and consequently very ill adapted to render them sympathetic to their patients. Let none deceive themselves; to accustom a man to shed blood, and to render him insensible to the sufferings of animals, is to degrade and brutalise him."

The worthy and humane doctor concludes by advising the students to protest against such sanguinary experiments by absenting themselves from the physiological course whenever they are to occur, or to leave the hall when the mutilations are about to commence. Magendie has repeatedly been blamed for his addiction to these practices, which he long repeated publicly when giving lessons at the Collége de France. Dr. Latour, another medical opponent of vivisection, as now practised, calls to mind a poor dog the roots of whose vertebral nerves he (Magendie) desired to lay bare, to demonstrate Bell's theory, which he claimed as his own. The dog, already mutilated and bleeding, twice escaped from under the implacable knife, and threw his front paws round Magendie's neck, licking his face, as if to soften his murderer and ask for mercy. "Vivisectors may laugh" (adds Dr. Latour), "but I confess I was unable to endure that heart-rending spectacle. Such practices are frightful and immoral." It was in 1830 that Magendie began official and public lectures and demonstrations at the Collége de France, and many were the hecatombs of dumb creatures that expired in agony on his bloody table. They tell of a Quaker who one day walked into the hall, hat on head, when these sanguinary manipulations were proceeding, asked for Magendie, and demanded of him by what right he thus tortured animals to death, and set an example of cruelty to his fellow-men. It is recorded that the operator was embarrassed to reply, but he did not the less continue his researches. He seems to have pursued them with a regard to economy, for we are told of animals being put by alive after they had undergone a certain number of operations for further dissection on a future day. Scientific butchers, it appears, consider it justifiable to extract the utmost possible amount of experiment from the luckless cat or dog, horse or rabbit, selected for their abuse. "The habit of such experiments," says Dr. Cartaux, "renders certain individuals so heedless of the pain they inflict, that one sees them plunge the bistoury into the tissues, and unreflectingly leave it there while pursuing a discussion which might certainly be carried on at any other moment. There are veterinary pupils who, after having tortured a poor horse for a whole morning, do not give themselves the trouble to kill it. If unfortunately the professor is not present to order them to put it out of its agony, it is left for the knacker to finish when he makes his round." At the veterinary college of Alfort a wretched horse is periodically given up to a group of students to experimentalise upon. They tie him down and torture him for hours, the operations

being graduated in such a manner (this is given on the authority of Dr. Guardia, of the Academy of Medicine) that sixty, and even more, may be performed before death ensues. The same authority declares these tortures perfectly useless, and that the experiments might just as well be made on dead horses. It appears, however, that since Dr. Guardia, with honest indignation, denounced those atrocities, some change for the better has taken place. Dr. Blatin, the Vice-President of the French Society for the Protection of Animals, says that the directors of the veterinary schools have limited the experimental studies of their pupils. "At Lyons, to cite one example, the removal of the hoof, which causes frightful suffering, is practised upon the living horse only once by each pupil, on the day when he passes his examination." This is certainly an astonishing stretch of humanity, and it must be admitted that Dr. Blatin is not difficult to mollify. He omits, however, to inform us of the benefit derived from this frightful act of torture. It is well known that in veterinary practice very few serious operations are ever attempted, and that in cases of fractures, bad wounds, and really dangerous affections, horses are much more usually shot than operated upon. Some of the most distinguished living anatomists and physiologists of various European countries have condemned vivisection as barbarous and unprofitable, and it is certainly high time that the law should interfere in France, if not altogether to prohibit, at least strictly to regulate and limit researches of such questionable benefit, and productive of so much torture. The voice of civilisation and of humanity imperatively demands it.

UTILISATION OF SEWAGE.

Baron Liebig furnishes an important paper on the utilisation of sewage. Not only, it appears, can an artificial manure be brought successfully and economically into competition with the manure of towns and of the fields, but the scientific cultivation of the former would have a very appreciable effect on the food markets of the world. England, if first it choose, can be much less dependent than she is on the corn and meat markets of other countries. Baron Liebig first disposes of the fears of the manufacturers and dealers in manures:—The sewage question, he says, is most intimately connected with the manufacturers of manure; so much so, indeed, that the latter may derive from it the greatest profit.

It may even be said that it is in reality the manufacture of artificial manure, which gives to sewerage its peculiar value and importance for the purposes of husbandry, and it is this which I shall endeavour to explain in what follows.

It is well known that the manufacture of artificial manure is based on the doctrine that the nourishment of all cultivated plants consists of inorganic or mineral substances. Manure consisting of organic substances can be produced by the agriculturists only. The farmer produces farmyard manure; the manufacturer, on the other hand, mineral manure, with which he furnishes the farmer with those efficient elements wanting in stable dung. The most important fabrication is that of superphosphate of lime. The question of immediate importance to be decided is the value to the farmer of the sewerage used, and it is easy to find this by comparing sewage matter with guano, the effect and price of which are known to the farmer, and whose value he is able to judge. The problem to be solved is, therefore, how much of the efficient elements of guano a farmer can convey to his field in a ton of sewage; or how many gallons of sewer water are equivalent to a cwt. of guano. Regarding the component parts of the best sorts of guano, we have certain and reliable data—those relating to sewer water are less so; but we might long ago have been fully informed of its average contents if, last year, at the mouth of each sewer in London, five gallons of water had been collected morning and evening every day during the week, and at the end of the seventh day one gallon of the collected seventy gallons subjected to chemical analysis. It would be necessary, of course, to determine as nearly as possible the quantity of water discharged at each sewer. The learned baron then gives Professor Way's analysis of sewer water in London, from which it appears that 101 tons (20,200 gallons) of sewer water contains the same amount of phosphoric acid, more than three times as much as ammonia, and sixteen times as much potash, as one cwt. of the best Peruvian guano. It will be observed (adds Baron Liebig) that there is a great difference in the proportion of phosphoric acid to ammonia in guano and sewer water. In guano this proportion is 6 parts of phosphoric acid to 8½ parts of ammonia; in sewer water this proportion is 6 parts of phosphoric acid to 26 parts of ammonia. The reason of this disproportion in the amount of phosphoric acid and ammonia in sewer water is at once perceived if we remember that the bones of the slaughtered animals do not find their way into the sewers. These bones are, however, the manuring matter in which phos-

phoric acid abounds, and their component parts, let it be well understood, must be given back to the fields if it be intended that the soil shall retain its fertility. Potash and ammonia are, according to their prices, far more costly manure than phosphates, and in many cases quite as necessary for the field as this latter can be. Potash and ammonia are wholly inefficient and useless without the presence of phosphoric acid; but with the addition of phosphates they become efficient and valuable. The manufacturer of manure is not able to supply potash and ammonia to the farmer in sufficient quantity, and at an available price, but it is easy for him to collect the bones and make up the deficiency of phosphate by drawing it from natural sources. It will, I think, be now perceptible what connection there is between the manufacture of superphosphate and the utilisation of sewage. Baron Liebig concludes by referring to the immense importance of this cultivation in developing the agricultural resources of England: — The employment of sewerage in agriculture could make it possible to bring large tracts of land into cultivation which hitherto, owing to the expense of tillage, had been laid waste and neglected; others, too, might be so improved as to make the crops remunerative, and good yields would bring in a larger revenue. The vast capital which hitherto has left the country to pay for corn and manure might be kept at home and employed for other purposes. Should the present state of trade and industry not materially change, a great part of this capital would be devoted to agriculture, and the natural consequence would be that the increasing population would find ample occupation in husbandry."

PROSPECTS OF AGRICULTURE — NEW CREATION OF ANIMALS.

(*From the 'Times.'*)

AGRICULTURE has been for a long time rising in the world. It used to rank as a slow and plodding occupation, and its principal associations were smocks, corduroys, and hobnailed shoes. It was the most genuine piece of antiquity that was to be seen. Its instruments were coæval with Cecrops and Triptolemus; its tillage was the same as that of the Georgics, and had descended straight from the age of the 'Odyssey,' of Hesiod, and of the Pharaohs. A farm yard was a purer field of archæology than Dover Castle, the Tower of

London, or Tintagel, than any Welsh or Scotch keep, or Wiltshire barrow. All this has changed, and a new spirit has come over the scene. We see steam-engine smoke rising amid the harvest sheaves, and new and strange machines of terrible shape for crushing and overpowering the obstinate clods. What apparatuses of desperate hooks, spikes, wheels, rollers, have we now to subdue the soil; an ancient husbandman would imagine that they were engines of war. But the Duke of Argyll, at the meeting of the Agricultural Society of Scotland, has lifted agriculture a step higher still. He gives it a fillip, indeed, and applies the scientific spur to it with a vengeance. He throws open a new world of invention, and draws up the curtain of a most marvellous future. He tells the farmer that he does not know his powers, and that they will astonish him and everybody else when he comes to know them. The farmer is, in fact, that personage who used in old times to be called a magician. He can make new animals—yes, and nobody knows what new animals will be made before very long. This, of course, applies to the breeding farmer. The duke is anxious, however, to disclaim any interference with the attributes of the Deity. Breeding, he observes, "is probably not a creative power, and yet it produces results which are very closely allied to creation, and perhaps are difficult to be separated from it." Mr. Darwin's book on the origin of species suggests this new world of agricultural creation; "no book which he had ever read contained more fertile principles for the progress of agriculture than the book of Mr. Darwin." Mr. Darwin's book ranks high as a philosophical speculation; but if the very large powers of transmutation which are described in that treatise are to have a practical direction given them, and if our live stock is really going to exhibit specimens of the transcendent elasticity attributed in that theory to animal nature, it must be admitted that we have a good deal in prospect. The days of rural stagnation are certainly over, and we trace a very active and lively future before us. Though breeding "is not a creative power," yet "a power so closely allied to creation" as the speaker describes will not fail to do wonders. What will the metamorphoses be? It is a subject full of exciting and anxious interest. What will our Sussexes and Herefordshires, Aberdeenshires, Fifeshires, Galloways, and Holdernesses—what will our short wools and long wools, our Southdowns, Leicestershires, Cheviots, and Delameres turn into? There is endless room for conjecture, and imagination may exhaust itself in the conception of those different forms and organizations which may arise upon the basis of the pre-

sent ones. We only recommend, so far as we have a voice in the matter, that the changes shall be in a peaceful, and not a belligerent direction. Nature has provided animals with weapons of offence and defence—has given, as the poet says, "horns to bulls and hoofs to horses." Let nothing fresh be added in this line. But the breeder will probably take care of this in his act of "creation." He has the matter in his own hand. It will be his own fault if his own last-contrived bull tosses him, and if his thoroughbred, upon whom he has exhausted all the powers of the plastic art, is found endowed with demoniacal powers of kicking. All this we hope will be provided for. We only want to observe now that this is certainly an amazing leap for agriculture as a science and profession. It was for a long time a sufficiently torpid affair; but when graziers wield powers "allied to creation," introduce a new plastic life, and give us an embodiment of Mr. Darwin's theory of the origin of species, this is indeed a flight for agriculture, and she touches the empyrean.

The truth is, there is all the difference between saying that Mr. Darwin, in constructing his theory, has made use of agricultural breeders, and that agricultural breeders can make use of Mr. Darwin's theory. Mr. Darwin found certain facts supplied him in the experience of cattle-breeding, particular changes which took place by mixing different varieties, and the production of new and improved forms by means of judicious combinations steadily persevered in. And upon these and other facts of the same kind he founds a theory of the unlimited transmutation of species, and the derivation of all existing animal forms from one or two original types. The cattle-breeder then, it is true, has assisted *him* in constructing a theory which, whether true or not, is the most astonishing that has come out in recent times. But we do not see what possible assistance Mr. Darwin gives the cattle-breeder. He can only give him back again the facts which the cattle-breeder gave to him, and which the latter was in full possession of before any theory was founded upon them. The agriculturist can only go upon the basis of his own familiar and hereditary facts. If he attempt to attach himself to the speculation which has been built upon them, he will only be carried up into the clouds. If he begin to think of transmuting species, he will find himself on a very wrong scent. He may be quite sure that he is no magician or enchanter; but if he can put Mr. Darwin's theory into practice, he is certainly the most wonderful magician that has yet appeared in the world. He is, indeed, a rural god, the "mighty Pan" come back again among us. This is too great a flight for agriculture. She had better confine herself

to her own *data*, and not connect herself with speculation. There is plenty of field for her ambition. The Duke of Argyll has properly eulogised the "fruits of that intercrossing and breeding by which they have now established such varieties of animals," and we see no reason why our farmers should not attempt to produce a rival of that "magnificent bull" whose head was discovered in peat moss the other day, and which is supposed by Professor Owen to have been a specimen of the original cattle of this country. Mr. Bakewell, it is said, "*made* the Leicestershires," but not by any power "allied to creation," but simply by judicious crossing. Mr. Bakewell was a very observant cattle-breeder, but he was neither a magician nor a Pan, nor even a philosopher and a theorist. He was a plain practical man.

But though the Duke of Argyll has rather overshot the mark in endeavouring to make farming a transcendent philosophy, ally it with magnificent speculations, and give it a new Darwinian basis, the attempt is well meant, and only expresses his wish to raise agriculture as a profession, and infuse a higher amount of intelligence and inquiring spirit into it. Here we quite agree with him, and willingly acknowledge the great value of his services as so generous and devoted a patron of Scotch agriculture. He will, we have no doubt, give a stimulus to the cause of good farming, though he will not make the Scotch farmers Darwinian philosophers.

MEDICO-LEGAL CONTRIBUTIONS ON ARSENIC.

By Charles H. Porter, M.D., Professor of Chemistry and Medical Jurisprudence, Albany Medical College.

(*Continued from p.* 445.)

6. *Reduction test.—Liquid tests.—a. The reduction test* now to be considered is the same as the last, except that the arsenic is volatilized in air instead of in carbonic acid. A number of tubes are to be prepared, with a bulb on one extremity. The mixture of the arsenical compound, carbonate of soda and cyanide of potassium, is to be introduced into the bulb of the tube by means of a paper gutter, as already mentioned, not more than half filling it. The bulb is first to be gently warmed (and if moisture escapes it should be removed with a twisted slip of paper), afterwards it is to be heated till the mass fuses, and finally more intensely. By this means an arsenic mirror is obtained of great purity and beauty.

b. Odour test.—If the tube be cut off just below the mirror

and if then it is held inclining upwards in the flame of an alcohol lamp, the flame will be tinged bluish-white, and the characteristic garlic odour may be perceived.

c. Guy's method of reduction.—As it is often difficult to distinguish the octahedral form of the arsenious acid crystals, or critically to examine the deposits, when the quantity is small and contained in a tube, Guy proposes the following method:

A tube is employed three-fourths of an inch in length, and of rather larger diameter than is commonly employed. This tube is supported in a vertical position by being dropped into a hole punched in a slip of copper foil. The arsenical mixture is then dropped into the tube, and heat carefully applied to the closed end; at the same time a clean microscopic glass cover or a glass slide is placed over the open end of the tube. Crystals of arsenious acid are thus produced, which may readily be examined by the microscope. When metallic arsenic is sublimed, the crust is found to consist of a multitude of globular particles, or if partially oxidized, of octahedral crystals mixed with the globules. The delicacy of this test is such, that with the $\frac{1}{1000}$th of a grain of arsenic thousands of distinct octahedral crystals of arsenious acid may be obtained. (*Archives of Medicine*, No. 3, p. 25.)

d. Oxidation test.—If the closed end of the tube be cut off and the mirror is carefully and gradually heated, the arsenic will volatilize, and oxidizing becomes converted into arsenious acid, which will condense in the cooler part of the tube in a mass of minute octahedral crystals.

e. Solution.—If that part of the tube containing the crystalline deposit be heated in a test tube with water the deposit will dissolve. With this solution the liquid tests may be made as follows:

Liquid tests.—a. If to the solution a few drops of nitrate of silver are added, and then very dilute ammonia, drop by drop, the characteristic yellow precipitate of arsenite of silver will be produced.

b. Treated with solution of sulphate of copper and ammonia, added as above, a grass-green precipitate of arsenite of copper will be produced.

c. Treated with chlorydric acid, and then strong sulphydric acid water be added, a precipitate of the yellow sulphide of arsenic is produced, soluble in ammonia.

d. If a small mass of the crystals (see *d*) be boiled with nitric acid, arsenic acid is produced, which gives, with nitrate of silver and ammonia added as above, a reddish-brown precipitate of arsenite of silver.

It is evident that the various tests given in this section may be made from the deposits produced in Marsh's and Fresenius' and Babo's apparatus.

Which and how many of the tests enumerated are to be made, must depend upon the quantity of arsenic found. In most cases, as has been said if discovered, there is sufficient present, with careful manipulation, to make them all.

7. *Preservation of the Tests.*—It is considered of importance by medical jurists that specimens of the poison obtained in the course of the examination of a medico-legal case be preserved, that they may be shown to the court if a trial occurs. In certain cases, as in those where metallic poisons have been discovered, this may readily be done. I have been in the habit, for a considerable time, in such cases, especially where arsenic has been found to be the toxical agent, to attach the slips of porcelain and the glass tubes containing the various tests to a sheet of cardboard, and inserting this in a frame (protected by a plate of glass).

In the upper part is mentioned the name of the party submitted to toxical examination; immediately below, the age and date of death, and the date of the commencement and completion of the examination; below these, in the centre, are placed the specimens; upon the right, opposite each, are stated the nature of the substances exhibited; upon the left are the names of parts or of the materials found to contain the poison, indicating by letters the specimens obtained from each.

By this arrangement the various results are placed in a secure and permanent form which may readily be inspected. The collection itself gives, at a glance, an epitome of the chemical examination.

As regards the modes of preserving the specimens, it may simply be said that the tubes containing the mirrors from Marsh's and Fresenius' and Babo's apparatus are drawn out to a point at either end, and sealed by a blowpipe, the deposits being in the centre; the same with the other solid tests. The liquid tests may be formed in tubes of the proper form by the successive introduction of the proper reagents, or they may be placed there after being formed in another vessel by simply heating such a tube and immediately immersing its open end into the liquid containing the precipitate, leaving it there till it cools; a portion of the precipitate and liquid will rise in it, when the open end is to be sealed. The tubes are then to be attached by wires or cords to the cardboard, and the proper names attached as already mentioned.

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

THE EFFECTS OF ABSTINENCE AND INSUFFICIENT FOOD IN ANIMALS.

The question proposed for examination is one of the most simple amongst those which are connected with the history of nutrition. Nevertheless it is extremely complicated, as the details which are comprised in it touch on the most intimate acts of the organism. Its principal divisions comprise, at the same time, physiology, hygiene, and therapeutics, and are in themselves capable of demonstrating the connection which exists between these three sciences. The effects of a total deprivation of food, or an insufficient alimentation on the healthy or morbid organism, are of great importance. It impresses numerous modifications on the different vital acts; it becomes, according as the case may be, a powerful prophylactic agent, a cause of disease, or a most energetic therapeutic remedy. Nevertheless, it is not studied at all, or but very imperfectly, unless in books on physiology. Broussais, amongst physicians, understood better than any one the importance of dieting in the treatment of disease; but if he perfectly understood the salutary effects of it, he had not a very clear idea of its pernicious and destructive results. Carried away by ideas which were true to a limited extent, he was unable to discover the exact measure of their application—he abused the use of a weapon which destroyed and killed as often as it cured; and it was in the name of physiology, however innocent of its exaggerations, that he inaugurated a most murderous system, the victims of which would be reckoned by thousands if the statistics could be obtained.

The illustrious reformer, who held dietetics in such high esteem, was only acquainted with their most salient effects; he ignored the most essential, even those which render abstinence fatal under a great many circumstances. With him, as with all theorists, the fantastic result of imagination took too much the place of facts. Before recognising and applying his means, he neglected to determine their effects in a precise manner. But what he and his school have

neglected, physiology has since attempted. Researches have been made on the effect produced by abstinence; and attempts been made to isolate, characterise, and expound them. In imitation of the chemist who tries his new apparatus with a white heat before employing it in analysis, physiology has studied the effects of diet on animals in their normal state, in order to discover that which takes place in the morbid. Thus it is enabled to impart useful advice to the medical practitioner.

The divisions into which the author is about to enter will show on one part how dangerous the exaggerations of Broussais were, and on the other how far the reaction which caused his system to be abandoned deviated from a just middle course. They will likewise prove that the ancient system of medicine was in certain respects wiser than ours. Hippocrates, on the subject of diet, was a more judicious physiologist than the author of the physiological doctrine. But how am I, asks the author, to attack this vast and complex question so as to bring forth all its essential points in their natural concatenation? I will begin with a paradox, by which I will endeavour to prove to you that an animal subjected to absolute diet really devour its own proper substance, and employs it to the same purpose, and finally destroys it in the same manner as the alimentary substances taken into the stomach. We will now inquire in what manner the absorption makes, so to speak, eleemosynary demands for its support on all the other organs, and how and in what form this is gathered and carried to the blood, which in its turn distributes it to the organs according to their requirements. The interstitial absorption which during abstinence supplies the intestinal absorption, to which the alimentary matters have ceased to be supplied, claims an exact amount in proportion to size, as a contribution from each part; from the muscular system the fibrine and the albumen to supply the plasma of the blood; from the white tissue the albumen only; from the adipose the fat to maintain the animal heat; from the viscera, the glands, the skin, and even from the bones; all the different elements are brought together and mixed in the same way, as it were, like the mendicant who stows in his bag the heterogeneous gifts he obtains by begging. In this manner the renewing of the blood, and, consequently, the nervous excitement, the muscular contractraction, the divers secretion, and all kinds of molacular action, are secured.

However, this does not suffice; it is necessary for the sustenance of life that the heat of the body should be main-

tained almost at the normal point. Now the blood, being adequately renewed, offers to the oxygen a portion of its materials, and sends this agent of combustion to every part, where it insinuates itself into the very centre of the solids, bringing it in contact with the elements susceptible to be burnt on the spot. Thus the products of the combustion are taken up and got rid of by elimination. As long as these two essential operations, viz., the renewal of the blood and the calorification, are regularly accomplished, abstinence from food is compatible with life. One can well understand that this state of things may be prolonged in proportion to the amount of matter that can be thus reabsorbed, and that there is more or less rapid destruction by combustion. It will be seen, in fact, that the duration of abstinence is in exact proportion to the state and condition of the animal, and in a contrary sense to the activity of the calorification. Before proceeding further, we would have you to observe that the phenomena by which life is maintained during total abstinence are neither unusual nor exceptional, but are constant and regular phenomena, which, under ordinary circumstances, have but a feeble activity, and go hand in hand with those of regular alimentation. But here only they are exaggerated and isolated; besides, the matter which is destroyed is not replaced. Fundamentally, nutrition is performed on one uniform plan. If the living substances destroyed are more than compensated for by those from without, then there is increased growth; if exactly balanced, then the parts remain stationary; if incomplete, then there is emaciation and atrophy; finally, if not replaced at all, as in total abstinence, then the wear and tear soon arrive at their termination.

Although there is in reality an internal nutrition in animals which are deprived of food, it is not exactly performed in the normal manner. In ordinary nutrition there is a double current; one supplying the organism with the materials from without, the other propelling and ridding the system of the useless matter. The first is irregular and intermittent; has its periods of sluggishness and stops, and which are even sometimes considerably prolonged. The second, on the contrary, is continual and irresistible; divers causes may retard its progress, but none can arrest it. In nutrition during abstinence from food, the current which ought to bring alimentatary matter from without is represented by a phantom (*simulaire*). The proper substance of the organism holds food, which is contributed or borrowed from all the tissues, to which it is afterwards returned under a new form before it becomes destroyed and eliminated. The

result is, that the organs recruit themselves at the expense of the common mass. The edifice threatened with ruin repairs the gaps with its own proper materials. These somewhat abstract premises being received, we may deduct from them that there are really three distinct modes of alimentation. 1st. The external alimentation by substances taken from without; 2nd. The internal, or that which during abstinence is effected at the expense of the proper materials of the organism; 3rd, and finally, the mixed alimentation which is effected at the same time by a small but insufficient quantity of food, and by the substances of the organism. This distinction, which in ordinary language would be a sophism and an absurdity, is however very correct in a physiological point of view, and it will throw a light on the facts which will be shown hereafter.

It was stated just now that an animal, when not put on absolute diet, subsisted on its own substance. This fact is incontestable. We will show that the quantity thus consumed is in direct relation to that of the aliments; we will afterwards inquire into the causes which actuate or slacken this consummation. Experiments will enable one to obtain this information; viz., on divers animals, the talipeds, the dogs, cats, porcupines, birds, and even the invertebrata. First, a horse of middle size, weighing 405 kilogrammes, of adult age, and well bred, very muscular, vigorous, and in good health, was given up by its owner on account of being weak on the fore legs. This unfortunate animal was shut up in a large stable for a month without food, but was allowed water, *ad libitum*, which was accurately measured. To prevent him eating his litter, a wire muzzle was put on. A register was kept of his general state; viz., the pulse, respiration, temperature, and the loss of weight. In thirty days he drank 42 litres of water—about 1 litre 4 decilitres a day; his weight had decreased 80 kilogrammes, or 2666 grammes in every twenty-four hours; in fact, one fifth of the original weight. As animals deprived of food lose nearly three fifths of their weight before death from starvation sets in, this horse had still two fifths left; his provision was therefore far from being exhausted. This animal had thus consumed of what I have called his internal alimentation a daily ration of 2666 grammes of flesh and 1400 grammes of water; that is, for every kilogramme of the living weight a ration of 6 grammes 58 centigrammes of flesh, and 3 grammes 45 centigrammes of water. Admitting that one fourth of this consisted of fat, the daily ration would be as follows:—787·41 grammes of carbon, 115·77 grammes of hydrogen,

75·05 grammes of nitrogen, 21·15 grammes of salts.* If this animal had been fed as usual, he would have easily consumed 7500 grammes of hay and 2270 grammes of oats; representing, according to the analysis of M. Baussingalt, 3938 grammes of carbon, 446 grammes of hydrogen, 139 grammes of nitrogen, and 672 grammes of salts. But if the deduction is made of the parts which have not been absorbed, but have been rejected as excrements, the amounts really taken would be 2574 grammes of carbon, 266 grammes of hydrogen, 61 grammes of nitrogen, 69 grammes of salts. Consequently, a horse consuming 2666 grammes of his flesh, being one third fat and two thirds muscle, only uses about one third of carbon, one half of hydrogen, and one fifth of the salts he would have used in his rations, and had he received them in the usual way, only the same quantity of nitrogen; he, therefore, lived with great economy. Let us now see how he used this moderate ration, or rather how he employed it; we know that it is necessary to reconstitute the blood, and to maintain the animal heat, the pulmonary perspiration, the function of the skin, the secretion of urine, &c. We assert that the reabsorbed substance must renew the blood and maintain it in all its integrity in respect of quality and quantity; this is, in fact, what does happen. Until the last day the pulse indicated by its fulness and strength that the vascular system was tolerably full, and on the 30th the blood rose to one metre seventy centimètres in Hale's tube. Its strength was, therefore, not far from normal, and it is not too much to say that the beatings of the heart had almost preserved their usual energy. The temperature of the blood was only one degree less than at the beginning of the experiment; there was only a difference of one tenth of a degree between the temperature of the blood in the left and the right ventricles of the heart. The quantity collected from the carotids, jugulars, and venæ cavæ, as well as from other parts, amounted to 27 kilogrammes, being one twelfth of the weight of the body. The blood was not in any way less rich in fibrin, and had all the physical characters of blood taken from animals in good condition, which had been deprived of food for a few days only. Its coagulum was covered with a white layer of a bluish shade, its serum was turbid, opaque, and lactescent, resembling chyle.

* These figures are according to the analysis of Liebig, 'Chimie Organique,' &c., pp. 313 et 336.

(*To be continued.*)

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this Society was held in the Institution Rooms, Cathedral Street, Glasgow, on Wednesday, 5th of August,

Alexander Robinson, Esq., M.R.C.V.S., Greenock, in the chair.

The *Secretary* read the minutes of the former meeting, which were approved of; also a letter from Mr. Dickie, V.S., Ayr, stating his desire to become a member, and for that purpose he would endeavour to attend next meeting.

Messrs. J. McDougall, V.S., Cardross, and J. Ferguson, Ayr, were both admitted members.

The *Chairman* then called attention to the prosperous state of the Society, and observed that the roll now contained upwards of thirty veterinary surgeons, situated at various places, and embracing a very large district of the West of Scotland. Nearly all the members of the profession in this district were members of the association.

Some, no doubt, were situated at a considerable distance from the place of meeting, so that their presence could not be expected regularly, but it gave him great pleasure to see so many of his brethren to-day, and he hoped they would find it convenient to attend often in order that all may gain information by the diversity of opinions and friendly discussion of the subjects brought forward.

To-day we are specially called upon to discuss the subject of Quittor. But before entering upon it, they would have an opportunity of hearing some remarks from Mr. Mitchell, whose experience and success in cases of quittor had often been commented on. Before, however, calling on Mr. Mitchell to address them, he (the chairman) would take this opportuity of saying a few words in testimony of the worth of a member and his son who were both present at the last meeting, but are now on their way to the far south —New Zealand. Mr. Dunlop and son, of this city, are gone from us for a time, and I cannot but express my feelings of sympathy with you at the loss of two such zealous supporters of this society. I am certain it is the expression of your sentiments in unison with my own, when I say that we all appreciated them as brethren, and can look back with pleasure on the many hours they spent with us in

this place. With the exception of Mr. Anderson, I believe the minutes will testify that no member was so regular in his attendance as Mr. Dunlop, senior. During the period of his presidency of the association he always found time to attend to its duties, and discharged them with faithfulness and fidelity, gaining thereby the esteem even of those who only had such an opportunity of being brought into his company. After retiring he continued equally zealous for the welfare of all, and especially the younger portion of the profession. Often did he say that to them he looked forward as the grand workers out of the benefits to be derived from associations such as this. That such an expression was not merely superficial, but deeply grounded, may be learned from the fact that he, along with our highly esteemed friend Mr. Anderson, may be said to have been the originator of this society in Glasgow; and we can form some idea of the pleasure he experienced at seeing their designs so nobly wrought out, and to all appearance with such great success. I could say much in behalf of our friend did time permit, and those present, who were his companions at college, can testify to his worth as a companion and friend at that time. We can all recite various incidents which we were often privileged to hear at our annual meetings, causing joy to all around; but our highest expressions are weak in comparison to our true feelings. He was free and familiar—a friend of the young, and a good companion of the old. His son was equally esteemed—a bright promise, I hope, of the future. And now that they are gone, I am sure they carry with them our best wishes for their future happiness and prosperity. We all unite in hoping they may land safely, and enjoy many days of health and true happiness, and in the words of our national poet, be blessed in *basket and store.*

Mr. Anderson said he would gladly endorse what had been so truly expressed by the chairman on the Messrs. Dunlop. No one entertained a higher opinion of them than he did, being a close companion of the elder one since college days; and during all that period not an angry sentiment had passed betwixt them—always happy to meet, and sorry to part. If, then, the society felt a loss at their departure, he, as an individual, felt it more. The chairman had referred to both as eminent members of this association, and especially to the elder as being the promoter of its origin. Both of us, continued Mr. Anderson, were for many years impressed with the idea that associations such as this would be of great

benefit to the profession, and accordingly we endeavoured, about twenty years ago, to put our views into practice in Glasgow. The time, however, was not suitable—opinions varied, and our profession required more members around the Glasgow district to carry out the object; hence it failed until we made the move which originated in this the West of Scotland Veterinary Medical Association. From what I have observed at our meetings, the amount of information to be derived, and the spirit displayed by the members for meeting together—I say it looks to me almost like an impossibility to suppose that it will become extinct, at least for some time to come. We are all alive now to its benefits, and so long as we keep united and anxious for the success of the profession, I cannot believe that those eminent young men who now rank as its chief supporters will allow such an institution to get weak or die. No doubt time changes the aspect of everything, and our association is not exempt. To-day we are called to record the loss of two members—only, however, by distance—but we are likewise called upon to enrol another two. Thus our ranks are increasing, and our influence extending, even to the other side of the world; for we know that if Mr. Dunlop, jun., be spared to arrive, and enjoy days, he will not neglect to send us occasionally a history of the diseases incident to the country to which he has gone, and to communicate with us on many points. He was our assistant-secretary, and would in all probability have become chief, as our esteemed friend Mr. Pottie has expressed a desire to retire from office; but now, separated as he is from us, he cannot act in that capacity, but he will, I am sure, act as our correspondent in that part of the world. His ability is well known, having gained the first prize at college lately; and while amongst us, having showed such familiarity on all subjects discussed, that we were compelled to speak of him in terms of praise. I am sure we all look forward to him as a young man of great promise, who, if spared, will rise to an elevated position in the profession, and be an honour to this association.

Several members spoke in similar terms as to the loss sustained by the departure of the Messrs. Dunlop, and afterwards it was agreed to send them an address as a mark of the society's esteem.

The *Secretary* then proposed that one half-hour, or, if necessary, an hour be devoted at each meeting to the recital and brief discussion of any rare or perplexing case that might have occurred in the practice of a member.

Mr. Dobin seconded the proposition, and suggested that

such be put into execution to-day, as he and others who were present had cases to relate. Both the motion and suggestion were agreed to, when Messrs. Dobin, Sharp, Robinson, McDougall, and others, gave some very important and remarkable accounts of cases.

The chairman then called upon Mr. Mitchell to address the meeting on Quittor, which he did in a most satisfactory manner, and entering minutely into a description of the structure of the foot, the nature of the disease, as likewise its causes and treatment.

An animating discussion followed upon the best method of treating certain cases of the disease, during which much diversity of opinion was expressed, but which was, nevertheless, of a practical nature, and calculated to be of vast importance to all.

After the discussion the chairman intimated that the society would meet next month, and that Mr. Blackie, V.S., Bellshill, would read a paper. The subject would be intimated eight days previous to the meeting.

(Signed) ALEXANDER POTTIE,
Secretary.

Veterinary Jurisprudence.

THE DEVON AND EXETER LAMMAS ASSIZES.

NISI PRIUS COURT.

Before Lord Chief Justice EARLE.

THE LATE RUNNING DOWN CASE.

TROOD *v.* BALKWILL.

MR. COLLIER, Q.C., and Mr. Stock and Mr. Bere were counsel for the plaintiff; attorney, Mr. Floud. Mr. Karslake, Q.C., and Mr. Lopez, were counsel for the defendant; attorneys, Messrs. Daw and Son.

It will doubtless be remembered that the question in dispute between the parties was tried at the last assizes, when a verdict was given in favour of the plaintiff. A new trial had since been moved for by the defendant in the Court of Queen's Bench, and granted.

The case was partly gone through on the previous day, but was adjourned, owing to the lateness of the hour, until this morning.

The pleadings were opened by Mr. Bere. Mr. Edward Trood was the plaintiff, and Mr. Robert Balkwill the defendant. The declaration set forth that the defendant ran against a horse of the plaintiff's, and killed it. The defendant pleaded first not guilty, and secondly that the accident happened through the negligence and improper conduct of the plaintiff's

servant. On these pleas issue was joined, and it was this issue the jury had to try.

Mr. Collier then stated the plaintiff's case, and afterwards called his witnesses to prove the same. The following are the facts:—The plaintiff, who resided at Matford House, near Exeter, is a gentleman, and an officer in the Yeomanry Cavalry. He brought the action to recover 60 guineas, the value of a mare which was killed on the 19th of July in last year, and the death of which he alleged to have been caused by the negligent driving of the defendant. The defendant is the landlord of the Butchers' Arms, in Exeter. On the 19th of July plaintiff, attended by his groom, drove to the St. Thomas's railway-station in his dog-cart, which was drawn by the mare in question. The plaintiff took the train to Torquay, and then gave instructions to his groom to go to the stables of Messrs. Rooke's with the mare. In the evening the groom went to a circus to see Tom King spar, and remained there until nine o'clock. Shortly afterwards he drove home again at a steady pace, he at the time being perfectly sober. After he had driven past Messrs. Pince and Lucombe's nurseries on the Alphington-road, and when nearing Mr. Myer's house, he heard a vehicle driving towards him. At this time, according to the plaintiff's case, the groom was driving on the left side, and seeing that the approaching dog-cart was on the same side as himself, he called out to the driver of the vehicle, who turned out to be the defendant. The defendant, however, took no notice, but came on at a rattling pace, drove against the groom, and struck the mare he was driving with his near shaft. At this time the groom was about eight feet from the hedge, and the defendant attempted to pass him on the inside. The plaintiff's mare backed a few paces, and it was known at the time what had taken place. At first the defendant drove on, but presently turned round, and drove against the plaintiff's dog-cart again, locking the wheels. Defendant then demanded the groom's name, threatening that if he did not give it him, he would drive over him and his horse too. Presently the plaintiff's mare, who had received a large wound in her breast, from which the blood was flowing in streams, staggered, fell, and died. The defendant's horse afterwards died from injuries received, notwithstanding that the owner had examined it at the time, and declared it all right. The learned counsel, after referring to the conduct of the defendant, inferred that he was not sober at the time the accident took place, and then said the question the jury would have to decide was on which side of the road the accident really did take place—whether it occurred nearer Mr. Myer's side than Mr. Pince's side, as alleged by the plaintiff, or whether it was on the latter side of the road, as stated by the defendant. Mr. Collier explained his version of the case by means of a model of the road.

The defendant's case, as stated by Mr. Karslake, and afterwards upheld by evidence, was as follows:—The defendant was driving home from Starcross—not at a furious pace by any means, and only eight or nine miles an hour, according to the evidence of some of the plaintiff's witnesses. When he arrived near Stony-lane, considerably beyond Messrs. Pince and Co.'s shop, and between that place and Alphington, he came up with a flyman, who, beyond all doubt, was the person, if any, who saw the accident. The flyman had gone out for the purpose of bringing two ladies from Alphington, and was returning to Exeter. He was on the right side of the road, and Mr. Balkwill had to draw out for the purpose of passing him. He saw the defendant continue on the proper side for some time, but he did not see the horses come into collision because he was behind at the time. The defendant relied on the fact that it was his near shaft that struck into the plaintiff's mare, and that he was driving on

the right side of the road, the dog cart of the plaintiff being about six feet from the pavemeut. Both the drivers shouted out, but before either could stop there was a collision, the horses recoiled, and the groom urged his horse as fast as he could, almost touching the head of the flyman's horse. The defendant immediately called out to stop, and threatened that if he did not he would drive into him. After mentioning several points of contradiction in the evidence on behalf of the plaintiff, the learned counsel in conclusion said there had been every endeavour on the part of the defendant to settle the case by arbitration prior to the first trial coming on.

His Lordship, in summing up, said that the precise question the jury would have to answer was, whether the damage sustained by the plaintiff was occasioned by the negligence of the defendant. It appeared to him that the point they had to concentrate their attention upon was, whether the plaintiff's mare was near Mr. Myer's wall. If so, the negligence of the defendant must have caused the accident, and, as far as he could see, the negligence that caused that accident, if the horse was close to Mr. Myer's wall, was in being on the wrong side of the road. If they were satisfied that the defendant was upon the wrong side of the road, according to the rule of driving, why then it would be the negligence of the defendant that caused the accident, and their verdict would be against him. He put this very carefully before them, because if they should think that the collision took place on Pince's side of the road, where the defendant said it did, why then the plaintiff would be the person who would be wrong, and the plaintiff would be the person that might be liable for the loss of the defendant's horse. Furthermore, although no evidence had been brought on this point, he would tell the jury that if the collision took place in the centre of the road, it would be clear that the plaintiff could maintain no action for the loss of his horse; assuming the rule that each party should keep upon his near side. For if the plaintiff's negligence conduced to the accident, to which the defendant's negligence also conduced, then no party could sustain an action for any loss experienced.

The jury retired to consider their verdict, at a quarter to four o'clock, and after an absence of half an hour they returned into court and gave a verdict for the plaintiff, damages 60 guineas.

THE DOG AND THE FORTUNE-TELLER. SUPERSTITION REGARDING RABID DOGS.

Clerkenwell Police Court.

A respectable-looking woman, who had with her a child about six years of age, applied to Mr. D'Eyncourt under the following circumstances:

The applicant stated that her child had been bitten by a dog, and as she did not know whether it was mad or not she wanted the magistrate to grant her an order to have it destroyed. The person to whom the dog belonged said the dog was not mad, and they would not allow it to be destroyed without she gave them 10*s*. A fortune-teller had said that the dog had better be killed, or else her child would go mad, and although she did not say when that was likely to take place, still when the planets crossed such a thing might occur. It was a sad thing for a poor mother to be in such a fix, and that was why she should like the dog destroyed.

Mr. D'Eyncourt said that there was much prejudice among a certain class

of poor people, that if a dog bit them or their children nothing would do but that the dog must be killed, He (the magistrate) should like the dog to live, for if it went on well he should be easy in his mind about the child. The applicant had better rest contented, and let the dog live.

Applicant.—I would rather the dog was killed. The fortune-teller read the cards, and said the dog had better be sent out of the world. Suppose the planets crossed, and the dog was not out of this world, what should she and her poor child do? It was horrible to think that her child might go mad. The dog was not worth a farthing, and yet the parties to whom it belonged wanted 10*s.* of her to have it destroyed, but she would see them hanged first before she would pay a single farthing.

Mr. D'Eyncourt said it was very foolish of the applicant to listen to such foolish twaddle. There is a prevalent notion that the dog must be killed to effect a perfect cure. He could do nothing for her; but if the parties to whom the dog belonged did not pay her the expenses she had incurred by calling in the doctor, she might sue them in the county court.

The Applicant said that she would adopt that course, and would see what a little dose of poison put upon some nice meat would do for the brute of a dog that had bitten her child.

DOG CASE.

Dogs of late have been somewhat conspicuous in our law courts; the same, it would seem, is the case on the continent. The following is from one of our leading daily papers.

Diplomacy has again been busy in Paris; not this time about Poland, or North or South, or looking after the interests of five ruffians *en voyage*. A dog has been the cause of the last protocols and *procès-verbal*, written in the Faubourg St. Honoré. It is a grave question, and involves a point of national law quite as curious as many other diplomatic propositions.

Mr. Hildyard, attached to her Britannic Majesty's Legation, has a bull-dog, Towler by name; one cannot be too particular in these cases. The tax-gatherer of the district views that bandy-legged "bouldogue" with a commercial eye, sets a value on him, and imposes an *ad valorem* tax of ten francs on his ugly head. His master objects to pay those two pieces of one hundred sous. "It is not the value of the halfpenny," as Liston used to say, "but the principle of the thing;" and Mr. Hildyard will see the tax-gatherer "further first." The matter is referred to M. Marguerie, a counsellor learned in the law of nations. Mr. Hildyard appeared in court, his "faithful dog" keeping him company, and it was decided that on the principle of *reciprocity* "Towler" should go free; but this did not satisfy the collector of taxes, and he "changed the venue," and referred the case to M. de Guigne, Royal Commissioner, who confirmed the previous judgment, but on quite different grounds; the legation is, by a diplomatic fiction, "British territory," and so Towler being at home, is an English dog, and free from French taxes.

It is thought—if this question had not been so happily settled—that after notes had been exchanged the dogs of each embassy must have been recalled, and a rupture of canine relations established. This is, happily, avoided, and the *attachés* of Paris and London may each go out with a dog to lead them if they are so minded.

THE

VETERINARIAN.

VOL. XXXVI. No. 430. OCTOBER, 1863. Fourth Series. No. 106.

Communications and Cases.

STRING-HALT—ITS DOUBTFUL PATHOLOGY.

By J. Busteed, M.D., New York.

Dear Spirit,—Enclosed you will find a few notes of some *post-mortems* made upon horses that had string-halt. My observations do not agree with those of Professor Spooner, or with the views entertained by Percivall, Youatt, or Goodwin. All of those gentlemen attribute this disease to an abnormal condition of the vertebræ, medulla spinalis, the sciatic nerves, or their coverings. From the dissections made by me, I am inclined to believe the disease is located in the hock-joint—that the spasmodic action is caused by the friction of the tibia passing over an irritable ulcer on the astragalus. It is well-known to medical men that cartilage, when in a healthy condition, is devoid of sensibility, but when inflamed or ulcerated, there is no tissue in the body productive of so much suffering; it is also known that some ulcers are so indolent that the application of caustic will scarcely cause pain, while others are so sensitive that the mildest dressing cannot be applied without severe suffering; I refer to this, as it is the only way that I can account for ulceration of the hock-joint which I have occasionally found in horses that were free from string-halt and from lameness. I am disposed to think it is the irritable form of ulcer only which causes the spasmodic twitching of the limb, which is but a symptom of disease.

Case 1.—Sept., 1841.—I had purchased for me, at the market where the old and diseased horses are sold, an aged

bay horse, with very bad string-halt in off hind leg; his limbs plainly told the hard work he had undergone; he had bog spavin in the nigh and thorough pins in both hocks. Had him destroyed with cyanide of potash. The brain, the spinal marrow, the nerves and their membranes, were carefully examined, as also the muscles and their tendons. The crural nerve was followed through its entire course, but not the slightest trace of disease could I discover. My attention was now directed to the hock-joints, beginning with the off one, on opening which I found the capsular ligament much thickened; a large quantity of synovial fluid, and ulceration of the astragalus in the groove between the trochleæ—the articular surface of the large cuneiform bone, on its superior face, was also ulcerated. I next examined the nigh hock; the capsular ligament was like the other, much thickened, and contained a much larger amount of synovia; the joint, in other respects, appeared normal.

Case 2.—A patient, whose child I was attending, asked me to look at the foot of his horse, which had been run over by a cart in the early part of the morning, remarking at the time that he would not take $500 for him, although he had string-halt in both legs—a fact known to me, having often seen him travel. After examining him, I advised his destruction, the hoof being crushed and the bones within fractured. He was bled to death, after which I had him removed to a shed in my stable yard, for the purpose of making a *post-mortem*. I commenced by opening the skull and vertebral canal, exposing the brain and spinal marrow, following the nerves from the sacrum to the hoofs, but failed in detecting any indication of disease. I next removed the nerves, commencing at the hoofs; also all branches, including the crural, which I had previously traced into the muscles, with the spinal marrow and brain. I laid the whole on a board, and examined with care the coverings of the brain and medulla spinalis, without detecting disease; the substance of the brain and marrow were both healthy. There was no anchylosis of the vertebræ. On examining the hocks, there was no external sign of disease. I opened the off hock, and found an ulcer in the groove of the astragalus, extending from a little below its middle upwards; between the trochleæ there was also ulceration at the inferior point of the articular ridge, lying between the malleoli of the tibia; the cuneiform and cuboid bones were firmly anchylosed. The astragalus of the nigh hock was likewise ulcerated in the same place, but not to the same extent; the other bones of the joint were free from disease.

I was kindly aided in this case by Dr. J—, for many years connected with the city hospital, and one of the ablest physicians in this city.

Case 3.—March, 1848.—A brown mare, aged, had been worked on the Harlem Railroad; very lame in off hind leg from spavin, string-halt in nigh leg; this animal was given to me by a dealer, as she was suffering from disease of the spavined limb. I directed her to be sent to the dock at the East River, and had her destroyed. She was killed before I got there, with a blow on the head from a hammer, which destroyed the brain. I commenced my dissection at the lumbar vertebræ, exposing the spinal marrow to the sacrum. There was a large amount of serum in the spinal canal, the membrane covering the medulla was a little paler than usual, otherwise it was healthy. I now traced the nerves of the off limb from their exit at the sacrum; for the space of five or six inches they appeared healthy, below that they were much congested, of a dirty, dingy yellow, with large patches of ecchymosis penetrating between the fibrillæ of the nerves—all the muscular branches appeared more or less affected. I next examined the joint; the astragalus was ulcerated in several places, all the bones were firmly united by bone, including the large and small metatarsals. I next examined the other leg, commencing at the sacral plexus, which was found free from disease, as was also the sciatic, and crural nerves, nor was there any abnormal appearance about the muscles. On opening the hock-joint, I found but little synovia; the astragalus had in it a deep ragged ulcer, which had penetrated the substance of the bone, in the centre of the groove; the external trochlea had a small ulcer on it. The articular surface of the tibia was also ulcerated. The other bones of the joint were free from disease.

Case 4.—A large bay horse, owned by a gentleman in this city, very fast trotter, string-halt in both legs, very bad in the nigh leg; was frightened, ran away, and killed. Having heard of the accident the following day, I called at the stable of his owner, and learned from the groom that he had been removed to the offal boat. I followed him there, and had him conveniently placed by the contractor, for the purpose of making a *post-mortem*. I was particularly interested in this case, as I had once been his owner, at which time he was affected only in the nigh leg. The skin was removed and the contents of the abdomen and thorax taken away. Six or eight ribs were fractured, one of which had extensively

lacerated the lung; this was the immediate cause of death. I examined the brain and spinal marrow, and their coats, all of which were healthy. I traced the nerves as I had previously done in other cases, but could not detect any disease. I found in both hocks ulcerative disease of the astragalus, most extensive in the off leg, which was the least affected with string-halt. The other bones of the hocks were free from disease.

Cases 5 and 6.—I made two other *post-mortems*, the minutes of which I have mislaid, but am under the impression that I found the nerves healthy, and that ulcerative disease of the hocks existed.

Case 7.—June, 1863.—A brown horse, presented to me by an old patient. I had known this animal for twenty years, nineteen of which I hardly think he missed a day's work. I observed the first symptoms of string-halt about six years ago. It commenced in the nigh hind leg, increasing in severity every year, until it became so bad that he would occasionally fall; there was also a want of action in the off hock, which I attributed to occult spavin. I watched this horse daily for some time after I had received him; he was as playful as a colt, not showing any indication of age, although twenty-seven or twenty-eight years old. His teeth were so much worn that he had to be fed on slops. I sent him about twenty-two miles out of the city, to the farm of a friend, who kindly offered to furnish me a convenient place for making a *post-mortem*. On the last of June, accompanied by Mr. L—, a veterinary surgeon and excellent anatomist, I visited the farm of my friend, who had everything arranged for me. The animal was destroyed by bleeding, previous to my arrival. An incision was made through the gluteal muscles of the off side, exposing the sacral plexus. The muscles were perfectly healthy, the sciatic nerve and its branches were traced through the muscles, and for some way below the hock, but not the smallest trace of disease could we detect, nor could I afterwards with the aid of the microscope; the crural nerve was examined with like result. The hock was next examined. On opening the joint it was found well supplied with synovia; there was an ulcer in the groove of the astragalus near the centre; the sinus at the inferior portion of the groove in the astragalus, which must not be mistaken for an ulcer, was very deep and but thinly covered with cartilage; the cuneiform and other bones of the joint which I expected to have found anchylosed, were free from

disease. The nerves of the nigh leg were next exposed in similar manner to that of the off, with more care, if that were possible. The scalpel, however, revealed no disease of the nerves or the muscles. For the sake of convenience, I divided the body at the last dorsal vertebræ, and then commeneed to lay bare the spinal marrow, which I did from the sacrum to the dorsal vertebræ. There was eonsiderable adipose tissue in the bony canal, the theca vertebralis was healthy; a transverse seetion of the medulla did not reveal the puncta. I now removed the nervous mass from its bed, with all its braneh es, for future investigation. Our attention was now turned to the nigh hoek, which showed no external indication of disease. On opening the capsular membrane it was found to contain a large amount of synovia. All the ligaments, including the capsular, were healthy. The tibia was placed in the position it would oecupy if the horse was standing; on viewing it in front, a ragged ulcer, with granular edges, eould be seen on the astragalus, it extended a little below where the inferior point of the medium eminence of the tibia dips into the groove; the synovial tissue was deep, and but lightly covered with cartilage. I separated the astragalus from the tibia, and found that the ulcer had extended the whole length of the groove, upwards and backwards. It was granular and ragged; the other bones of the joint were perfeetly healthy. None of the vertebræ were anchylosed.

[On commenting on the above, it is neeessary to observe, firstly, that the original communication was made to the *New York Spirit*.]

OBSERVATIONS ON THE ABOVE.

By Professor Varnell, Royal Veterinary College, London.

It requires but little reflection to pereeive the advantages likely to acerue to veterinary scienee from members of the medical profession interesting themselves about the diseases incident to the lower animals. That the veterinary surgeon should feel it a great privilege to be able to obtain their valuable assistanee in elucidating phenomena which often oecur in his practice, I think we must all admit; but at the same time I feel persuaded that the praetitioner of human medicine may derive much that is valuable from investiga-

tions in comparative pathology, especially if he be assisted by an intelligent veterinary surgeon. Therefore, while I consider the obligations are, to a great extent, mutual, I feel nevertheless confident that by such associations the status of our profession is materially enhanced in a social point of view.

In the New York newspaper (*Wilks' Spirit*, of August 1st, 1863), which I have just received I find a column and a half occupied with some remarks on "string-halt," by Dr. Busteed, a practitioner of human medicine in that city. Now, I cannot but congratulate the veterinary surgeons of New York and its vicinity, in having those amongst them belonging to the sister profession who, from their education and long and careful training in scientific research, are able to afford so much valuable assistance.

I have set myself the task of briefly analysing the remarks the doctor has made on the pathology of "string-halt;" also of showing, as far as I am able, to what extent the English pathologists to whom he has alluded are correct, and to inquire if the theory he has propounded with regard to the cause of this affection will stand the test of critieism.

In the first place, the doctor states, "That his observations do not agree with those of Professor Spooner, or the views entertained by Percivall, Youatt, or Goodwin; all these gentlemen attributing this disease to an abnormal condition of the vertebræ, medulla-spinalis, the sciatic nerve, or its coverings."

Dr. Busteed does not state how he came into possession of Professor Spooner's opinion respecting the cause of *string-halt*, but I suppose he must have obtained it from Percivall's 'Hippopathology,' vol. iv, page 387, in which is an extract from the *Veterinarian* of 1838, twenty-five years ago, containing the result of the dissection of a celebrated racehorse, named "Guildford." Now, I contend that the only inference to be drawn from the remarks of Professor Spooner, in the extract referred to, is that string-halt depends upon an abnormal condition of the sciatic nerve. He does not, however, say what may be the cause of this condition, nor its precise locality; but I have no doubt that he considered that, to produce the effect, it might be at any part of this nerve, between its root in the spinal cord and its distribution in the muscles chiefly employed in causing the affection. This opinion, I think, he most likely entertains at the present time. With regard to the late Mr. Percivall's views respecting the cause and seat of string-halt, he says, at page 385, vol. iv, of his 'Hippopathology,' "Those who suppose

it to be a muscular affection mistake, I conceive, the effect for the cause. I choose rather to refer its seat to the spinal marrow, or to the nervous trunks passing between it and the affected muscle." This quotation undoubtedly shows that Mr. Percival considered the excessive muscular action in this affection was due to undue excitation of the nerves that supply the muscles implicated, and he endeavours to illustrate this by alluding to a case of fracture of the back, the effects of which, in his opinion, caused irritation of the roots of the motor nerves at their junction with the spinal marrow.

These views coincide with those of Professor Spooner, and which can be shown, as far as they go, to be correct: at least such is my opinion. Again, in the same work, and on the same page, is a short extract from an article in the *Veterinarian* of 1829, by Mr. W. Goodwin, on the cause of string-halt, in one particular case only. The horse he refers to was destroyed in consequence of some accident, but from his having been the subject of string-halt care was taken to examine him *post-mortem*, especially in reference to the cause of this affection, and it was found that his dorsal vertebræ were partially anchylosed, and the spinal canal diminished thereby in size. Now, although Mr. Goodwin might have considered the diseased state of the vertebræ in this case to have been the cause of string-halt, still we have no right to suppose that he did not consider it could be produced by other causes.

With reference to the late Mr. Youatt, I am not aware that he ever advanced any special opinions of his own respecting the cause of string-halt, but simply compiled the opinions of others.

Having thus briefly considered the views, as far as the published accounts go, of Messrs. Spooner, Percivall, and Goodwin, on this subject, I will next take a glance at those propounded by Dr. Busteed as to the cause of the affection. It appears that, after dissecting the hocks of several horses known to have been affected with this malady, in some instances for several years, he came to the conclusion that it was produced by an ulcer on the upper articular surface of the astragalus, which, by irritating the nerves of the limb, caused a spasmodic contraction of the muscles, but he does not say which nerve is irritated, or what muscles are influenced, by such irritation. On the other hand, Professor Spooner expressly states that it is the sciatic nerve which is involved in the production of the phenomenon, and that the irritating agent, whatever it is, may exist at any part of the nerve.

Now, have we any evidence to bring forward in support of these views? In the first place, has string-halt ever supervened immediately upon fracture of some of the vertebræ? We have already alluded to a case by Mr. Percival, and which, I think, is conclusive, both because he seems to have had no doubt of its being so, and also because it agrees with physiological reasoning.

In the second place, we may refer again to the case mentioned by Mr. Goodwin, which, although not so conclusive as the last named, is nevertheless not to be lost sight of. It requires no particular stretch of the imagination to suppose that, at the anchylosed part of the vertebræ, the holes of conjugation might become diminished in size, and their margins perhaps rendered uneven from spiculæ of bone, and thus the nerves which passed through them become irritated. Or the string-halt might have been caused, as was supposed, by undue pressure of the spinal cord, in consequence of the abnormal narrow condition of the spinal canal. I could bring several similar cases forward in support of this idea. Then we have the evidence of the experimental physiologist, who shows that, by pinching the roots of the motor nerves within the spinal canal, previous to their joining their ganglia, the muscles they supply with motor stimulus are thrown into convulsive spasms; or if the sentient nerves going to any particular muscle be pricked, reflex nervous power, with muscular contraction, is the result. Such being the effect of excited nervous action caused by irritation, we only require a persistent abnormal excitant to produce, when the limb is about to be moved, undue muscular contraction.

In the next place, to show the effects of irritating the sciatic nerve, let the following experiment be tried. Lay bare the first division, the *anterior* tibial, at that part where it crosses the peroneus muscle, about one inch and a half below the head of the *fibula*, and pinch it with a pair of forceps, and the muscles it supplies, namely, the peroneus, the flexor, metatarsi, and the extensor pedis, will spasmodically contract, as in string-halt. But wholly divide this nerve at the point alluded to, and in a few hours string-halt will have subsided altogether, these muscles being paralysed. I think this is fair evidence that to cause string-halt some of the fibres of the sciatic nerve must be suddenly irritated, and also that the muscles alluded to are those that are involved in producing this phenomenon.

Filaments from this division of the sciatic nerve can be traced to the front of the hock—chiefly sentient, of course—and who, I would ask, that has seen a moderate share of

praetiee, has not observed string-halt in association with exostosis on the inferior anterior and inner surfaee of the hoek? And they may have been able to trace the development of the latter with the oecurrenee and inerease in intensity of the former, and have also believed (and very eonsistently so, in my opinion) that the string-halt was due, in such cases, to the sentient nerves of the part being irritated by this abnormal growth of bone (constituting spavin). I well remember two partieular eases in whieh string-halt took plaee very shortly after the horses—subjects of this malady—had received a severe injury from falls. One of them was under treatment for a long time, during whieh he was fired over the upper part of the haunch of the affeeted limb, when he became quite free from lameness, but the string-halt was rendered permanent; still it in no way interfered with his general serviees.

During the last twenty years I have examined *post-mortem* several horses that had been the subjeets of string-halt. In one ease in partieular, I noticed that the areolar tissue which invested the seiatic nerve, from a little below the saeral foramina to the point where it gives off the lesser sciatic, was considerably thiekened, and, as compared with the same eovering to the nerve on the opposite side, was of a palish-brown eolour. I earefully separated the faseieuli of this nerve, but I eould not diseover that its fibres had been strueturally interfered with. Still, the altered and condensed state of the investing tissue may have been a source of persistent irritation when the limb was moved.

I have thus endeavoured to show that the exciting cause of string-halt is not, of neeessity, located in one partieular situation; but, for the effects to be continuous, the cause, whatever it may be, must be so also. This brings me to the eonsideration of Dr. Busteed's *ulcer*, which he considers the only eause of string-halt. Now, can we eoneeive that an ulcerated hoek is likely to be the permanent eause of string-halt? For argument sake, we will suppose that an uleer on the upper artieular surfaee of the astragalus is capable of produeing such an effect; but then, is it likely to be persistent? Is the uleer to remain without an extension of its ravages year after year, produeing this peculiar phenomenon, without any other ineonvenienee to the animal? I am sure that the doctor, upon a little refleetion, will say, "no, this cannot be." Would not the uleer, from its tendeney to spread, gradually involve the whole or the greater part of the artieular surfaee of the bone, and the horse therefrom become so acutely lame that he could not bear the slightest weight

upon the limb? Or should the ulcer chance to heal (which is barely possible), and the part become covered with a dense, smooth deposit (eburnated), would there then be string-halt? If there was, it certainly would not be from an ulcer. I certainly think that we may safely banish from our minds the idea of articular ulceration being the cause of string-halt. I have dissected many ulcerated hocks, but I am not aware that string-halt could be traced, in any one instance, to disease of this nature.

In the next place, let us see whether that which Dr. Busteed describes as an ulcer is in reality one. I scarcely need state what are the characteristics of an ulcer. The doctor, and most of the readers of the *Veterinarian*, are no doubt quite familiar with the nature of such a sore. They all know very well that it means a solution of continuity of the parts so affected, and that on its surface is usually found a discharge, varying in appearance and consistence according to the tissues involved. This discharge is rarely colourless, and very often is fetid, indeed always so when bone is involved, and when cartilage is breaking up and liquefying, it may assume a greenish aspect. If such ulcers as the doctor describes had really existed, would not the synovia he so frequently alludes to have been discoloured; and would he not have adverted to this had it been so? I have no doubt he would. But the inference to be drawn from his remarks on this fluid, seen when exploring the interior of the hock-joint, is that it was normal; and in this respect I believe he was correct. Nor can I believe that the so-called ulcers had anything whatever to do with the production of string-halt. Then if the depressions the doctor met with on the articular surface of the astragalus, and occasionally on that of the tibia also, varying in size and also in outline, having irregular borders, are not true ulcers, what are they? Why, simply those parts of the articulations upon which cartilage was never developed. They were, I have no doubt, congenital. Such places are more commonly met with on the articulations in question than upon any other in the whole skeleton of the horse. But I have often seen such peculiarities on the articular surfaces of the glenoid cavity of the scapula, also that of the humerus and the opposing articulations of the ulna and radius. These all vary, like those upon the tibio-astragalan articulations generally, both in size and outline.

It may, however, be asked if we do not meet with instances of ulceration of the joints in which the synovia is not discoloured, or, at any rate, but very slightly so? I answer in

the affirmative; but such are not the open ulcers, with granular edges, referred to by the doctor. This disease of bone has more the character of dry caries, which gradually undermines the cartilage of incrustation until a number of small pin-holes exists on the surface. Such a condition is often met with on the under surface of the navicular bone of the fore foot. In the hock it is likewise frequently met with upon the upper articular surface of the large metatarsal, and both surfaces of the cuneiform bones, and also on the under articular surface of the astragalus. I believe that this form of disease sometimes suddenly assumes a different character when the undermined articular parts of the bone, and its much-thinned cartilage, caves in, if I may be allowed the expression. The exposed surface, and some little distance around it, becomes intensely inflamed; an unhealthy sanious discharge takes place from the surface of the sore, which, with the *débris* of the disintegrated bone, discolours the synovia, and is very likely to render it fetid. But this is not the so-called ulcer of Dr. Busteed.

One word more respecting articular cartilage, for it is this variety which the doctor refers to when alluding to its extreme sensibility when inflamed. Now, structural anatomists know very well that this cartilage has neither nerves nor blood-vessels in it. How, then, can it become inflamed? How can it become "so sensitive that the mildest dressing cannot be applied without severe suffering"? I can fancy that the doctor will say, "This is only quibbling. Of course I only mean the part from which the cartilage has been removed by disease, or the highly inflamed bone under the cartilage, where it may not have been removed." If this is what the doctor means, I must apologise to him for alluding to it in the way I have done. I must think, however, that, so far as our knowledge goes, precision in our description is far less likely to lead to wrong inferences.

I can fancy that some of the readers of the *Veterinarian* will also say, "You have endeavoured to pull down a theory that gives a definite cause for string-halt, which no veterinary pathologist has hitherto attempted, and in its stead you have merely stated your opinion to be that anything which would persistently, when the limb is in motion, irritate a certain nerve, is calculated to cause the affection." I admit that I have been by no means definite as to the cause of this malady. There is a mystery about it which, for the present, is darkened over with a heavy mist that requires considerable research to clear away; and the remarks I have made upon Dr. Busteed's paper, headed "Doubtful Pathology," have

been more with a view to excite inquiry than any desire to find fault, and I trust the doctor will accept them in this light.

ON SOME OF THE DISEASES OF THE RESPIRATORY ORGANS OF THE HORSE AND OTHER ANIMALS.

By Professor Brown, M.R.C.V.S., London.

(*Continued from p.* 456.)

Humoural pathology, as expounded by the old school, is of necessity revived in our day under a variety of new titles. It no longer being permitted to the scientific man to talk of the "humours" in the system, he takes refuge in the terms "morbid matters," "blood poisons," or something which may express his idea that there is in the animal a material which is essentially injurious, and whose presence is productive of a certain condition, which is denominated unhealthy. There may be no positive disease of any organ, but any little derangement is likely to be more than ordinarily troublesome. A slight wound discharges constantly, or ulcerates, and refuses to heal; the legs swell, one of them particularly; the heels are chapped, thrushes appear; and the groom sums up the whole matter by stating his conviction that the horse is "humoury;" while the veterinary surgeon has the satisfaction of reflecting that he cannot much improve upon the explanation. Whatever name be given to the state described, one thing is evident enough, the animal so circumstanced is a very unsatisfactory subject to treat if attacked by influenza or common catarrh. All sorts of evils may be apprehended—nasal gleet, abscesses in the fauces and other parts, extensive œdematous swellings, painful tumefaction of some of the extremities, congestion of lungs, and throughout fever of a low character associated with great prostration. Whether glanders and farcy may arise spontaneously out of this condition of system, when aggravated by a febrile attack, we do not pretend to decide, but there is no doubt that these diseases occasionally present themselves as sequelæ; their prevalence, however, and the numerous sources of contamination, argue strongly against their spontaneous origin.

The complication of a catarrhal affection with abscesses is the most common, and one of the most annoying, on

account of the time required for maturation of the tumour and subsequent healing of the wound, setting aside the debilitating effects.

Usually the submaxillary space is the situation of the suppurative process, but not unfrequently the sides of the fauces representing the guttural pouches suffer. In "strangles" the formation of a small tumour is often the earliest evidence of derangement, a little knot being perceptible before any febrile indications are present. In the disease termed "bastard strangles" this appearance of a small enlargement, gradually increasing and ultimately suppurating, is commonly the only sign of disease throughout, save, of course, the symptomatic fever which generally attends the formation of pus. Sometimes the tendency to the development of purulent matter is so extreme that quantities are deposited in various organs—the brain, lung, and even between the muscles of the shoulder and hind extremities.

Under any circumstances suppuration is an exhausting process, both from the pain which attends it and the loss accruing to the system from the continued discharge of the fluid secreted. While, therefore, febrifuge medicines are needed no positively depletive treatment can be tolerated, and as soon as the suppurative action is completed, which will be indicated, by the cessation of pain and fever, the patient will often require support. During the discharge of pus, mineral tonics and bitters seem to be peculiarly advantageous in association with a liberal diet.

Catarrhal affections may be complicated with previous organic disease of lungs or liver, in which cases the result will be determined often by the amount of the former derangement. Upon a system previously debilitated, from any cause, a catarrhal attack will often act fatally and with remarkable rapidity.

Extension of a diseased condition is almost a natural consequence of continuity of surface, and it is probably less remarkable that irritation of the nasal lining should travel to the bronchial membrane than that it should not; sometimes the derangement is confined to the nostrils or the larynx, but only in very mild attacks; generally the whole respiratory membrane is in some degree implicated, when the attack continues sufficiently long to permit the extension.

Cough is considered to be a sign of laryngeal or bronchial disease, but it must be accepted as such with much qualification; during the early stages, and sometimes throughout the progress of the malady, and even after its subsidence, morbid sensibility of the mucous membrane of the larynx or

bronchial tubes may exist to such an extent that the slightest stimulus, the contact of cool air, the presence of a particle of food in the fauces, the membrane's own secretion, or any external pressure, will suffice to produce the peculiar convulsive effort of expiration which constitutes a cough. That the larynx is the part most prominently concerned, we have ample proof in our own experience, although the sensation of irritation is often felt in the bronchial tubes. The occurrence of cough is direct evidence of this state of irritability. The absence of cough is no evidence of the healthy condition of the membrane of larynx or bronchiæ, as inflammation even may exist without it, and certainly increased secretion, evidenced by the mucous râle, is observed in many cases where cough is entirely absent. No stage of the disease can be said to be distinguished in a particular manner by cough; it may be present from the first, it may only commence when the mucous secretion has become excessive, and it may not appear until the animal is convalescent; but in whatever stage it occurs, it must be considered as indicative of excited sensibility, irrespective of the state of the diseased parts.

Between catarrhal disease and inflammation, the difference is not so marked as to be easily defined; speaking of the local changes, it would be impossible to distinguish between the two in many instances; but certain constitutional effects follow upon the development of the more active disturbance, and enable us to say when the inflammatory condition is established, although they do not assist us to determine precisely when it commenced.

An exacerbation of fever will generally be accepted as one symptom; quickened respiration, certain evidence afforded by auscultation, and the character of the pulse, will further aid the diagnosis. The pulse will not, however, taken alone, suffice to distinguish the precise nature of the disease; a pulse of inflammation does not exist in practice. No evidence afforded by the animal body under disease is more difficult to weigh impartially, none upon occasion so contradictory. Very slight causes we have found to produce remarkable effects, altogether disproportioned to the extent of the influence at work. And he who has not read the symptom carefully, and in the light of long experience, had best follow the example of some practitioners of talent and observation he could name, and disregard it altogether.

Catarrhal diseases, when the blood is charged with débris from non-elimination, are, for obvious reasons, likely to assume a grave character. To illustrate our meaning, and at

the same time to connect the previous somewhat scattered reflections, let us assume a case of common occurrence.

A certain horse just of an age for domestication is bought from the hands of a country dealer, and taken to London or some other large town for the purpose of being inducted into the position he will be required hereafter to fill. The animal is fat, and probably lively, presenting an appearance of health and vigour; we are quite safe, however, in asserting that his present condition is not the result of active exertion combined with judicious dieting; his owner's object has been to fatten him for the market as quickly as possible, and whether he has succeeded by the use of oilcake or potatoes, or whatever other food contains in abundance the requisite principles, it is very well known that he has not endeavoured to render the subject hardy by putting him to work. The horse in this plethoric condition, with his liver charged with fat, his skin inactive, his lungs incapable of sustaining half their proper share of exertion; the blood, poisoned by the products of decomposition that should have been removed by the liver, kidneys, lungs and skin, is taken by his purchaser, the town dealer, to be prepared for the work for which he is intended; to diminish plethora, however, is no part of his new owner's desire, the animal must still have abundance of stimulating food, and while a certain amount of exercise is inevitable in the course of preparation for harness or saddle, it is usually of the kind least adapted for improving the tone of the system, being violent, of short duration, and given at long intervals.

After some such spasmodic proceeding, involved in the process of "pulling the horse well together," as it is called, he comes into his stable, perspiring, tired, or rather exhausted; he is reported "off his feed;" an occasional cough is heard, he is voted to have "caught a little cold;" the veterinary surgeon is, perchance, on the spot, and the case is pointed out as one of no great significance; he sees the horse looking dull and stupid, refusing his food; the pulse will be quick and weak; mouth hot; respiration short, and double the normal rate, the flanks moving so slightly that it is difficult to count the number, and the mucous membrane tinged of a decided yellow, mingling with the red; the fæces are hard, small, and light-coloured, and the diagnosis is "bilious fever." Auscultation discovers increased bronchial sound and, very likely, a mucous râle.

The fact is, the "little cold" has caught the animal in a most unfortunate state, with the emunctories of the system inactive from long disuse, the blood deteriorated by accu-

mulations of effete matters, and the organism wanting in tone to resist the influence of diseased action. In the excited state of the circulation the various organs, unable to do what was before required of them, are now further called upon; the lungs particularly suffer, passive congestion takes place, inflammation supervenes, and exudation results. As the respiratory surface is lessened, the circulation and respiration become more laboured, the fever increases, critical diarrhœa occurs, adding to the exhaustion; the animal suffers rapid prostration, and dies, not so much from the force of the attack, as from the want of power to resist it.

During the time the patient has been suffering there has been complete loss of appetite, but generally considerable thirst; he has probably lain down frequently for some days, and then remained standing for long periods, or, as in many instances, persists in lying down, frequently up to the last. The fact, once accepted, of a horse standing constantly during an attack of lung disease, we presume to be a fact no longer in the mind of any practitioner of experience. Horses certainly, for years past, have been observed to lie down commonly enough in every phase of pulmonary disorder; the obstinate continuance in the standing posture is, in our experience, rather the exception than the rule.

Post-mortem.—We find a considerable portion of the lung-structure obstructed by accumulated blood, and also by exudation matter, and often large quantities of fibrin between the lobules, giving the appearance of pleuro-pneumonia as seen in the lungs of cattle. Sections examined microscopically show a remarkable diminution of the number of air-vesicles; the red exudation, which is found in large patches, sometimes surrounded by a layer of fibrin, consists of large granular corpuscles, and smaller granules in abundance. Occasionally a few cavities are found containing a purulent-looking fluid; in this fluid, however, the corpuscles are not those of perfectly formed pus, not being acted upon by acetic acid in the same way, although, in other respects, the general resemblance to pus-cells is perfect.

In many of these cases the liver has been found soft, light-coloured, and enlarged to twice its normal size, its cells under the microscope appearing filled with large fat-globules; this state of fatty degeneration has doubtless existed for some time prior to the attack, which was the immediate cause of death, and would ultimately have led to rupture and internal hæmorrhage. The influence exercised by the diseased organ upon the nutritive functions must, of course, be considerable, although it cannot be denied that animals

that suffer from it commonly give no evidence of the existence of the malady until after death.

Treatment under such circumstances becomes very difficult and unsatisfactory, and, indeed, cannot be conducted upon any general principles. A minute analysis of all the symptoms must precede a complete and correct diagnosis before remedies can be applied with a chance of success.

With this view we propose to examine in detail the signs which the animal presents, and the conclusions to which those indications lead, selecting those symptoms which are characteristic, to the exclusion of many peculiarities of individual cases, whose adduction would obscure the discussion, and compel a needless multiplication of examples.

JOINT LAMENESS IN COLTS, ASSOCIATED WITH AND SYMPTOMATIC OF LUMBRICOID WORMS.

By C. Dickens, M.R.C.V.S., Kimbolton.

Such, perhaps, for want of a more correct term, I have named a disease I have occasionally for some years past been called upon to treat. I do so from practical observations made during illness, also from *post-mortem* appearances of some animals that were the subjects of empirical treatment, and others which had been so long neglected as to defy medical aid, and, lastly, from a marked recent case, which, with your permission, I forward an account of for your Journal.

I have found the cart-bred colts to suffer most. It generally occurs to those between the ages of nine months and two and a half years old. I do not recollect seeing an adult horse affected, and my youngest patient is the one I am about to record the history of. In the early part of August I was sent for to see a cart-colt, then sucking, about three months old. I found it very lame on the off hind pastern, with increased heat, sensitive to the touch, and a slight discharge from the heel. Some lotion was sent, and in a few days all appeared to be right, but about a week after I was again called in to see it. There was now extreme swelling, with pain and increased heat over the head of the femur of the same limb. Aperients were given, and a slight blister applied over the swelling; this continued for about three days, and

I anticipated the formation of an abscess. The mare having been my patient for ophthalmia and grease, and the secretion of milk being scanty, I suggested the propriety of taking the foal off, which was acceded to, and he was fed on soft food, crushed oats, &c. In a few days the lameness again left, the swelling subsided, and my patient seemed to be quite convalescent. About a week had elapsed, when I was again requested to see him. This time nearly the same symptoms were evinced as before, but at the point of the left shoulder. The animal was subjected to antiphlogistic treatment, and in a few days again appeared to be convalescent. About a week after, he was attacked with gastric or abdominal pains, under which, in spite of all our efforts, he sunk. The treatment consisted of oleaginous aperients, combined with small doses of opium, frequent enemas, counter-irritants, &c.

Post-mortem examination.—All the organs occupying the thorax were healthy and well developed. The stomach was slightly inflamed, and contained about a quart of fluid, in which were floating about a dozen lumbrici, which were alive. Youatt, in his work on the 'Horse,' says these worms are seldom found in the stomach; and Percivall, in his 'Elementary Lectures,' says they are never found in that organ. But as both these gentlemen practised in London, their observations were most probably confined to the adult horse. I have seen them in the stomach some half dozen times.

The duodenum was completely plugged to repletion with them. The jejunum and ileum contained a great many—when collected, more than a quart—and a few stragglers were found in the colon. The whole of the intestinal tube was inflamed, the colon and cæcum were bordering on gangrene, and contained a quantity of coffee-coloured fluid.

General symptoms.—In the early stage we find dulness, a carelessness about moving in some cases, a little œdema exists about the joints and abdomen, the mouth and tongue are dry, the pulse languid, the buccal and conjunctival membranes of a leaden hue, the skin dry, always there is a great disposition to lie down, and occasionally inspissated mucus is seen lodged around the anus.

Treatment.—So soon as suspected, the animal should be placed in comfortable quarters, with plenty of bedding, and fed liberally with soft nutritious food. An occasional bran mash should be given, with linseed, cut hay, crushed oats, carrots, or, what I prefer, Swede turnips. In the next case that comes under my notice I shall feel inclined to try the

soup beverage, so ably commented upon by Professor Varnell in your last number.

The medicinal agents I have resorted to have been oleaginous draughts, combined with turpentine, or the oil of juniper. In the early stage, and where gastro-enteritic symptoms are shown, I omit the turpentine, and give occasional doses of opium and frequent clysters. I have found great benefit as restoratives from the use of gentian, sulphate of iron, and quinine. The Antim. Potass. Tart. I have also used with some success, in small, continued doses.

In a back volume of the *Veterinarian* there is a very interesting case of worms in the abdomen, from the pen of Mr. Litt, of Shrewsbury, and I may be permitted to express a wish that that gentleman would occasionally continue to enlighten us on this and other subjects.

It is not my desire to impress on the minds of any the idea that the majority of those puzzling lamenesses which are subject to translation are connected with worms, but I am persuaded that such as I have described do occasionally prove symptomatic.

TRAUMATIC TETANUS.—RECOVERY.

By R. H. Dyer, M.R.C.V.S., Waterford.

As many as six cases of tetanus have occurred within the last month or six weeks in this locality—one after castration, a second from a wound in the leg, a third also from a wound, a fourth from amputation of the tail, a fifth from a wound in the leg, and the sixth from a wound on the cranium.

I had an opportunity of seeing three of these cases, the first of which was a bay mare, with injury to the skull, numbered above as the sixth case. She had been under treatment by a practitioner for about a fortnight, as the owner informed me, who, not having succeeded in combating the disease in a case then in hand, advised that the mare in question should be destroyed, it being a hopeless case.

The owner, however, not wishing to lose so great a favorite as this animal was, applied to me for advice. On visiting the mare, she appeared to be in an almost hopeless state, but nevertheless I remarked, "While there is life there is hope. I will do that which succeeded in a former case, by way of experiment in this." With much difficulty the animal was

brought to the infirmary and put under treatment, which was essentially the same as that recorded by me last year, although some of the details were somewhat varied; and I am happy to be in a position to state that on Saturday last, after being with me five weeks, she was returned to her owner's stable perfectly recovered. This morning he called to thank me for the trouble I had taken in restoring to him his favorite, when he also made me a handsome present by way of fee.

Four of the other cases referred to died, but the other I have not yet heard the result of.

Having been fortunate in the treatment of the last two cases of this dreadful malady, it gives one hope of further success, and it goes to prove that we are not retrograding. I would, by way of encouragement and warning to the young members of the profession, say, don't be in a hurry to condemn an animal for destruction.

SUPPOSED EFFECTS OF THE ALSIKE CLOVER ON HORSES.

By E. Wheeler, M.R.C.V.S., Rookley, Isle of Wight.

A few cases have come under my notice during the last year or two of horses having sore lips, nose, mouth and tongue, likewise of the heels and around the coronet, and I am inclined to think that it results from eating a new kind of clover lately introduced into the island, and which, I think, is new to England. The first case I saw was two years ago, and I at once pronounced the clover to be the cause. I have seen several more cases this year, arising, as I believe, from the animals eating the same kind of clover. I am not acquainted with its botanical name, but here it is called "alsike clover." How it produces these sores, or what principle in it causes them, I am not prepared to say; but it seems that the lips and around the nostrils are the first places affected, from coming into contact with the food, and a few days after sores show themselves on other parts. These are by no means difficult to get rid of, as, after changing the food and exhibiting a little cooling medicine, they soon heal up.

I have sent you a sample of the clover. It is similar to the broad-leafed, except the bloom, which is more like the Dutch, tinged a little with pink. It is possible I have discovered a "mare's nest;" but not seeing nor hearing of its

effects before, I have thought it worth notice, and if you or any of my brother "vets." can give any further information respecting it, I shall feel obliged.

SECOND COMMUNICATION.

From the Same.

Since my former communication respecting the poisonous quality of the alsike clover, I have had another team of horses affected by it, principally on the nose and mouth, but not the legs. This team had been fed in the stable, the clover being cut and brought home for them. The other horses were tied in the field by the leg, and consequently their legs were continually coming in contact with the clover, the tops of which were bitten off. Their noses and lips were much worse, which convinces me that the juices of the plant, oozing from the stalks where separated by the teeth, and which, of course, must be always moist, was the cause, while that which was brought into the stable, not being so, consequently those horses were not so much diseased.

These cases also show the difference in the susceptibility of the different coloured skin to be influenced. The white is mostly diseased. Two or three of the horses have narrow white stripes running up the nose, which are much affected, while the other parts are but little. It is the same in reference to white heels.

ALSIKE CLOVER.

Trifolium hybridum, or Alsike clover, is a species which appears, to a certain extent, to combine the properties of the red and white clovers. It was considered by Linnæus to be a hybrid, and is cultivated to a considerable extent in the district of Alsike, in Sweden, from whence it derives its name; and was, we believe, first introduced into this country about 1834 or 1835.

It has for the last few years engaged the attention of agriculturists in Scotland and various parts of England to a considerable extent; and its reputation is now so firmly established, that we think it is likely to become much more extensively sown this season than it ever has been before. Its chief advantage consists in its succeeding on land which, from repeated sowings of red and white clover seed, has become cloversick.

Some difference of opinion is entertained as to the comparative merits of this variety and red clover for the depasturing of sheep; it being affirmed by many growers that sheep will leave any other kind of grass or clover to feed on the Alsike, whilst others consider that its principal merit consists in its succeeding so well on cloversick soils, its perennial habit and fibrous root being so dissimilar to the red or white clover. Where it has been grown, it has invariably been found an excellent preparation for wheat; and we have no doubt it will shortly become sown quite as extensively as either red or white clover, and prove a most valuable acquisition to our artificial grasses. The more it becomes known, the greater will be its cultivation; the high price that the seed has previously borne and its scarcity have hitherto prevented its more extended use.—*Mark Lane Express.*

CASE OF STRANGULATED VENTRAL HERNIA.

By A. J. Owles, V.S., General Staff, Aldershot.

Sept. 3rd.—At 5.30 p.m. I was called to see a mare which was said to have injured herself by jumping across a wattle hurdle. The accident occurred at 1 o'clock, but as the injury was considered only trifling, I was not sent for at once.

Symptoms.—Mare down, evincing pain, and frequently looking round at her flank; pulse about 60, small and hard; respiration disturbed. On examining the nature of the injury, I found a small punctured wound to exist close in front, and to the near side of the mamma, with a swelling extending backwards and upwards from it. On introducing my finger the swelling proved to be caused by intestine. No internal opening could be felt. The hobbles were sent for, which, however, did not arrive till 7.30 p.m., the mare continuing in pain the whole time. She was at once secured with the hobbles and placed on her back, and I introduced my finger through the external opening to discover the seat of the rupture, which was found to be in the direction of the swelling, and about four inches from the wound in the skin. I tried to reduce the hernia by manipulation, but without success; the external opening was then enlarged, so as to admit my hand, and efforts were again made to return the gut; but failing in this, and finding the stricture was not

likely to be overcome by taxis, and that the intestine was beginning to feel cool, I introduced a bistoury guided by my finger, and carefully enlarged the opening anteriorly; I then returned the intestine without trouble, the wound in the skin was closed by sutures, and the patient liberated. She was greatly exhausted, but much easier after the operation; the pulse was 70, and weak. I gave Tinct. Opii et Spt. Nit. Æth. ana ʒj, in the form of draught, which was ordered to be repeated in four hours, and the patient to be kept very quiet.

Sept. 4th, 8 a.m.—Animal still in pain, and frequently looking to her flank; pulse 50, and fuller; she has passed no fæces, and refuses to take gruel or mash. I abstracted five pints of blood, the pulse then became weak and irregular; ordered Aloes ʒiv, cum Opii ʒj, in ball, and directed injections to be thrown up every two hours.

12 o'clock at noon.—The pulse is softer, the pain abated; still no fæces have been passed, except a few balls returned with the water after the injections. Gave Opii et Calomel ana ʒss, Aloes ʒj, in ball, and ordered the injections to be continued in use.

6 p.m.—Animal free from pain; has voided some fæces and partaken of a little mash and tepid water. From this time she has eaten what was allowed her; the external wound has suppurated and assumed a healthy action, and is at the present time nearly healed; the swelling which existed about the part, from effusion, at first, is almost absorbed, and the patient may be considered convalescent.

RUPTURE OF THE DIAPHRAGM OF A COLT.

By W. F. Cooper, Student of Veterinary Medicine,
Clunbury, Shropshire.

On Saturday, the 2nd of May, at 8 a.m., I was requested to attend a thorough-bred yearling colt, the property of Mr. Weyman, of Little Brampton, one mile from my residence.

I was informed that the colt was seen the evening before, when he appeared quite well, and was grazing as usual, but on the morning in question he was observed presenting all the appearances of an attack of colic. An ordinary antispasmodic draught had been administered previous to my being sent for. On my arrival I found the colt lying down, and it was with great difficulty that I could induce him to rise; the

eyes and head were dreadfully bruised, from the violence with which the animal had dashed about during the previous night; the pulse was about 80 in the minute, but feeble; the extremities were cold, and the respiration extremely laborious; in fact, the symptoms closely resembled those of the latter stages of enteritis, and I must confess that I treated him accordingly, though without much hope of success.

Three hours afterwards the respiration was still more difficult, which I should have thought impossible had I not seen it, the pulse indistinct, and the animal manifested great distress.

He died at 4 p.m., three hours previous to which he remained standing, and appeared to be easier, which I attributed to mortification having set in. All at once he fell and expired.

At nine the following morning I made a *post-mortem* examination, when I found that the diaphragm was ruptured on the right side, and that six feet three inches of the small intestines had protruded into the thoracic cavity. Some of the intestines were inflamed, but the protruding portions were completely mortified. The lungs were collapsed, but otherwise healthy, and the abdominal viscera (with the exception of that already mentioned) also appeared in a healthy state. The aperture in the diaphragm was about the size of a crown-piece, and *the edges were thickened, quite smooth, and healed over,* as if it had been ruptured for some time. Is it not possible that the rupture in the diaphragm may have existed for some time without interfering with the general health of the animal, beyond the alteration in his respiration, which would not be observed, as the animal was at grass; and that the intestines were forced through the opening during the gambols of this colt and a little entire companion, which were often noticed previous to his illness?

ON THE PAY AND POSITION OF THE ARMY VETERINARY SURGEON IN INDIA.

India; *August* 6, 1863.

Gentlemen,—I have intended to write to you for a long time on the above subject, and I am induced to do so now, without further loss of time, by seeing that a large number of young gentlemen have lately passed their examination; and also knowing that a very mistaken idea is entertained by many persons at home as to Indian pay and allowances, I may, through your assistance, be instrumental in undeceiving some as to the emoluments accruing to a veterinary surgeon

in India. I have read with much interest the article in your number for June by "The Ghost of an Indian Vet.," the only fault in his letter, in my opinion, being that he took by far too favorable a view of the case, as I shall endeavour to show.

I sincerely trust you will use your able pen in our behalf. The unfairness of not allowing the Warrant of July, 1859, to have effect in India, is at once so apparent that it requires no remarks from me to explain it. I hope and trust no candidates will be found for army appointments until the "Warrant" is brought to bear in India. Speaking from experience, I say a veterinary surgeon in India is much worse off than in England. It will be a little difficult to make this apparent to people in England. As explained in your June number, a veterinary surgeon, after five years' service, according to the Royal Warrant of 1859, is eligible to promotion to the rank of first-class veterinary surgeon, which gives him the relative rank of captain and 12*s*. 6*d*. per diem. In India, as at present managed, a veterinary surgeon gets English pay at 8*s*. and the relative rank of a cornet for the first ten years of his service; of a lieutenant for the next ten years, and after twenty years' service he ranks as a captain, thus losing fifteen years. Now, on what grounds can this be defended? and who will enter the army to be treated in this way? I am convinced that, were the true state of things more generally known, no veterinary surgeons would come to India. Now I will try to explain how "The Ghost of an Indian Vet." has taken too favorable a view of the case, and endeavour to show that the young veterinary surgeon would not have a balance of seventy rupees to pay for his horses, &c., but would, on the contrary, be about ten rupees to the wrong side of his account, if living with the greatest economy.

The pay and allowances of a veterinary surgeon are Rs.289 15a. 10p.; palkee allowance, Rs.30; total, rupees 319, annas 15, and pices 10. His expenses will be at least as much as follows:

Mess bill, mess subscription, band subscription, &c. &c. .	150	0	0
Servants	60	0	0
Keep of horses, at least	50	0	0
Butler's bill for fuel, lights, &c. &c. &c. . .	30	0	0
Instructor in native language	15	0	0
House rent	25	0	0
Total expenditure per month . .	330	0	0
,, amount of pay . . .	319	15	10
Deficiency	Rs.10	0	2

I have not said a word here about any pocket-money for the veterinary surgeon; these items are the mere necessaries of life.

The veterinary surgeon receives, in addition to the above, a sum of two annas per horse, for supplying medicine, both the European and native, bandages, &c., *about* Rs.62 8a. *The strength of a regiment is about five hundred.* Expenses of European medicines, bazaar medicine, bandages, &c., at about two annas per horse, Rs.62 8a. Neither have I taken into account the deterioration in value of horses. Two respectable chargers and a good pony would not be procured at the present time much under £200; nor have I allowed for such an unfortunate thing as a charger dying, and such things do happen sometimes, even to a veterinary surgeon. I have been also careful to keep under the mark in estimating the probable monthly expenditure.

Now, this is about a fair estimate of accounts. If our young friend has no private means, what can he do but get in debt; and when in debt, when is he likely to see England again, or cease to be in debt? These are things I trust young gentlemen will think well of before entering the army. A veterinary surgeon is badly enough used at home, in the way of pay &c., but in India ten times worse. In England he is found in servants for a very small sum; in India they are very expensive. He likewise, in England, receives his fuel, candles, house, &c.; in India this all has to come out of his pay of Rs.319 15a. 10p. I am afraid I shall weary you with these details, but I could not avoid it.

I have made no mention of expenses of uniform, &c., not a small item, but difficult to estimate correctly. I do sincerely hope that our indefatigable and talented Principal Veterinary Surgeon will take the case of the poor Indian veterinary surgeon in hand. It is to him, I think, our hopes should be turned. Right well has he proved himself "the right man in the right place," and a friend to the members of a profession of which he is an ornament.

The pay of a veterinary surgeon, even if he be not promoted to first class, is 11*s.* 6*d.* per diem, or £17 16*s.* 6*d.* per mensem. The pay and Indian allowances of a veterinary surgeon are £15 10*s.*, exclusive of what he receives to keep his horses on, pay his house rent and tentage, &c. Out of these allowances he makes very little profit; in fact, houses often cost more than the allowance amounts to.

If he be made first class, his pay in England is £19 7*s.* 6*d.*; his pay and Indian allowances still amount only to £15 10*s.* during the first ten years of his service. Veterinary surgeons, again I say—do not come to India.

I dare say that the Warrant of 1859 induced many to enter the army, and some of them have since come to India. This was just about four years ago, and nothing has been done for us yet. When will the authorities give us our rights? Many veterinary surgeons are getting tired of waiting for some improvement. It is very hard for a man when he has thrown, it may be, five or ten years of the start, and also the best part of his life away, suddenly to find he has all along been deceived, and that he has to begin again, his prospects for private practice being then nearly ruined. This it is that prevents many from leaving a service in which their talents are paid for at such a miserably low rate. I could go on still further. I have supposed, in my statement, that the veterinary surgeon finds the climate to agree with him, even if the pay does not. If he gets ill in two or three years after coming out, is there anything for him but to stay out here, at the risk of, and probably the sacrifice of, his life? This really appears a mournful picture, but it is no less a true one; and what makes it worse is, hopes are from time to time held out of improvement, which hopes never seem to be realised, but merely tend to prevent a man leaving and improving his position in some other walk of life.

In conclusion, I would beg of you to let the true state of affairs become generally known, so that as few victims to the miserable deception carried on as possible may be found. To live in a climate like India, and to lose all the pleasures of England for half a life, even when well paid for so doing, are bad enough. But, Messrs. Editors, to do all this, and to get into hopeless debt into the bargain, are evils a man would endeavour to save his greatest enemy from. These latter evils await the veterinary surgeon in India. Now, all you young gentlemen who have had any thoughts of India and the army, take warning in time. The smallest private practice, or the worst paid assistant in England, is a happy and a prosperous man compared to, yours very faithfully,

AN INDIAN ARMY VETERINARY SURGEON.

To the Editors of 'The Veterinarian.'

UNIVERSITY OF

Facts and Observations.

Vitality in Horses.—Some experiments have recently been made in France by persons skilled in the veterinary art, with a view of ascertaining how long horses may live without food in certain contingencies, as, for example, being shut up in besieged places. The following results have been noted. A horse may live for twenty-five days without solid food, and merely drink water. He may live seventeen days without eating or drinking. After taking solid aliment for the space of ten days, but with an insufficient quantity of drink, the stomach is worn out. The above facts show the importance of water in the sustenance of the horse, and the desire the animal must feel to be supplied with it. A horse which had been deprived of water for the space of three days drank eleven gallons in the space of three minutes.

Murrain in Egypt.—The murrain continues to destroy numbers of cattle. It has appeared at Cairo, at Tourals, leaving two intermediate provinces untouched. Mustapha Pasha is reported to have lost 2000 head, worth £60,000; other large proprietors have lost in proportion. In some districts, for want of animals, the fellahs are to be seen harnessed by fives and sixes to the plough. Transports have arrived from different places, bringing cattle, sheep, goats, and other provisions, for Government account, which are sold to the dealers at moderate rates, with the order to retail to the public at about half the price which has lately been paid. The customs' duties have also been remitted on the chief articles of food. The viceroy is doing his best to mitigate the consequences of the cattle disease.

Velocity of Nerve Force.—By the aid of a chronoscope, M. Hirsch has come to the conclusion that nerves transmit their impressions at the rate of thirty-four mètres a second. M. Heimholtz estimated the velocity at 190 feet per second; but his experiments were performed on the motor nerves of frogs, and those of M. Hirsch on the sensitive nerves of man.

Action of Carbolic or Phenic Acid on Virus.—M. Lemaire states that vaccinations with mixture of vaccine matter and carbolic acid produce no pustules. He also

asserts that it possesses some influence over the virus of glanders. He is of opinion that the acid prevents the reproduction of the virus, and thus the disease is not communicated. The power, he adds, that carbolic acid possesses of destroying a virus is the more remarkable, since cauterization, whether by the actual cautery or potassa fusa, does not prevent the effects of inoculation. M. Renault inoculated with glander virus thirteen horses, and the places were afterwards cauterized with the actual cautery at intervals varying from one hour to four days after the inoculation. All the horses, however, became glandered, and died. Some sheep were inoculated with the virus of smallpox; and although the actual cautery and potassa fusa were both subsequently applied, they all took the disease. The corrective power of the acid was also by experiment ascertained over the poison of the bee and the venom from a toad.

Difference between Putrefaction and Gangrene.—M. Pasteur avers that neither in their origin nor in their nature is there any resemblance between putrefaction and gangrene. Gangrene, instead of being a putrefaction properly so called, appears to be that condition of an organ in which one part is preserved, in spite of death, from putrefaction, and in which the liquids and solids act and react, chemically and physically, beyond the normal actions of nutrition. Putrefaction begins at the surface, and afterwards reaches the interior of a solid mass. By the aid of vibriones this process commences and is carried on, the body having been preserved up to this time by life and the nutrition of its organs.

Infusoria.—The researches of Ehrenberg have sufficiently proved the presence in the air, in some localities, of infusorial organisms, as those of L. Pasteur, of Lille, and others, have demonstrated spores of fungi and germs of vibriones to be of frequent occurrence in certain atmospheres. It must not, however, be inferred from such observations that these microscopic beings are of themselves sources of impurity or capable of reproducing it. On the contrary, they are merely attendants on foulness otherwise derived, and, like confervoid vegetation in water, are, during their processes of life and propagation, sources of the purest oxygen gas. Unfitted for existing, except in impurity, they would seem destined, by their mode of being, to act as one of the natural means of purification in circumstances of extreme pollution.

Respiration of Ruminants.—M. Reiset states that a proto-carburet of hydrogen is emitted during the respiration of ruminants, which he considers arises from the changes their food undergoes during digestion; they likewise emit a little nitrogen. He also states that the consumption of oxygen and emission of carbonic acid gas go on so quickly, that cattle stables in France require much more ventilation than is generally allowed to them.

Cinchona Bark from India.—At a late meeting of the Linnean Society, Mr. Howard exhibited specimens of cinchona bark sent from India. By analysis, this bark has been ascertained to contain a per-centage of quinine and the other febrifuge alkaloids fully equal to bark of the same species grown in South America. This is of great importance, as the gradual but certain destruction of the cinchona forests of America has been of late a subject of much anxiety.

The Acari of Solutions.—Mr. Shadbolt has ascertained that the acari which presented themselves in the electrical experiments of Mr. Cross and Mr. Weeks, supposed to be thus formed, and which have since been found in a solution of nitrate of silver, belong to a species widely diffused; but how they manage to exist in poisonous and caustic solutions is not yet understood.

Birds and Insects.—If the arrangements of nature were left undisturbed, the birds would kill so many insects that the insects could not kill too many plants. A certain insect was found to lay 2000 eggs, but a single tomtit was found to eat 200,000 a year. A swallow devours about 440 insects a day, eggs and all. A sparrow's nest in the city of Paris was found to contain 700 pairs of upper wings of cockchafers, though food of other kinds was procurable in abundance. It will easily be seen, therefore, that birds prevent too great an increase of insect life.

Concentrated Animal Manure.—A large quantity of manure is made in Lyons by boiling down the flesh of animals, principally horses, in close vessels, to a soft consistence. This is then mixed either with bone-dust, animal charcoal, ashes, or gypsum, and is afterwards dried and powdered. Such manure contains seven or eight per cent. of nitrogen.

Test for Sulphur.—A solution of molybdate of ammonia in hydrochloric acid, diluted with water, is stated by M.

Schlossberger to be so delicate a test for the presence of sulphur, that its existence in a single hair may be recognised by it. The solution is changed blue if only a trace of sulphur be present.

Estimation of Nitric Acid.—M. Reich has found that powdered quartz drives off the nitric acid from nitrates, and particularly the alkaline nitrates, at a barely perceptible red heat. This reaction, he says, may be available in the determination of nitric acid by difference. The nitrate is merely heated with four or six times its weight of quartz in fine powder. The presence of chlorides and sulphates does not affect the process, the nitrates alone becoming decomposed.

Use of Watery Vapour in the Air.—Besides the well-known value of moisture in the atmosphere for the sustenance of the life of vegetables and of man, through the processes of evaporation and condensation, which are externally going on, and the mutual dependence of the one on the other, Professor Tyndall has demonstrated that the vapour of the atmosphere has the power of absorbing heat—and if of absorbing, of giving it out again—ninety times greater than the air which carries it, if so be this latter have its power of absorbing radiant heat reduced to unity. Were our atmosphere perfectly dry, the extremes of temperature would be excessive. The sun would burn us during his appearance above our horizon, and when his influence was withdrawn the loss of warmth would be violent and rapid. The removal of the aqueous vapour from the atmosphere of England for a single night, we are told by him, would be attended by the destruction of every plant which a freezing mixture could kill. Watery vapour, as a great absorber of caloric, enables our atmosphere to grow warm, and thus we live in an agreeably diffused heat; while on mountain tops, where the air is very dry and the solar rays strike with comparatively undiminished force, severe extremes of heat and cold are experienced. To our moist skies, also, says the professor, we owe the beautiful complexions of our women, which we should be sorry to exchange for the various gradations of orange, tawny, brown, and black, which so-called better climates produce. Nor must vapour be supposed to have any necessary association with turbid skies. It is when undergoing precipitation that it disturbs the deep, clear blue. When in solution it improves the colour of the atmosphere, and leaves distinct the vision of terrestrial objects and of the moon and stars.

THE VETERINARIAN, OCTOBER 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

AIDS TO ADVANCEMENT.

We have before observed that the vantage-ground on which we stand, as a profession, at the present day, is very high—although not so high as we hope to see it—and the facilities for acquiring knowledge correspondingly great. Not to avail ourselves of what has been done by others, and thus to promote our continued advancement, would be as foolish as if the mariner, when on the trackless ocean, were to refuse to refer to the many charts that have been published, on which reliance may be placed, and by which he is enabled not only to reach by the shortest route his desired haven, but to do so with safety, since on them the hidden rocks and dangerous reefs are carefully laid down that have been discovered by previous voyagers. Or, to take another simile, what if a traveller, desirous of exploring a recently discovered country, were to disregard all the information that others had acquired, and of which an account had been given to the public; and full of self-sufficiency as to his knowledge of the place and powers of endurance, started off, boastingly saying he needed no help from others—would it be likely that he could add so much that was new and interesting to the inquiry, or make such easy progress as he who, more wisely studying what others had observed, and where others had been, used to advantage the communicated information? Surely not. The first, in all probability, would be for ever lost, sunk in the mighty waters, leaving no trace even of where his vessel was engulphed; the second, after fruitlessly traversing a seemingly boundless forest, would become bewildered, or, parched with thirst in a desert land, would lay himself down to die. Or should it be that they both return, they would have nothing to report but a long recital of disappointed hopes and encountered

dangers, which, had they acted otherwise, might have been avoided. There can be no questioning the fact that he alone is wise who, observant of the doings of others, on them founds his course of procedure, not necessarily treading in the same steps, but using all obtainable information as aids to his progress.

In nature we perceive incessant motion to exist, which is ever tending to the development of some of her effects. The phenomena of heat and of light, and probably also of that inscrutable power termed electricity, are simply the result of motion, either continuous or interrupted.

"Physical research," says Dr. Phipson, "has shown us that when we develope a given force or vibration—for instance, that of electricity—we can obtain, according to circumstances, a vibration called positive electricity, or a vibration called negative electricity, the properties of which are opposite, and neutralise each other. So again with light—we can obtain at will vibrations of light which neutralise other vibrations, and so produce darkness. The same occurs with sound—with one kind of vibration we neutralise another, and produce silence. As regards heat, it is probable that such will also be found to occur when experiment has been brought to bear upon this subject, for heat appears to follow laws closely analogous to those of light, electricity, and sound. In the present state of science these phenomena are referred to waves or undulations of matter. If the waves be of equal or multiple dimensions, the effect of the undulation is increased; if, on the contrary, the undulations do not correspond, they interfere with each other, and in certain circumstances neutralise each other completely, just as when we oppose to a body in motion a body moving in a contrary direction with the same mass and velocity. The same state of things exists for chemical action, and we find for the chemical elements a positive, a negative, and a neutral condition."

M. Martin reminds the Academy of Sciences that in 1858 he published a work entitled the 'New School of Electro-Chemistry,' &c., in which he showed that the imponderables may be proved to be endowed in their elements

with acid and basic properties, like the ponderables. The two electricities, for example. Negative electricity he places at the head of the acid series under the name *Electrile*. Positive electricity takes its place at the head of the basic series as *Etherile*. The compounds formed by the union of these two, the author says, are always neutral, but differ according to the state of condensation, constituting in the highest state of condensation light, in a lower state heat, and in the lowest the etherial fluid. The last fluid he considers a combination, in which the two simple bodies neutralise each other without losing much of their liberty of action, as is proved by the ease with which they may be separated.

Dr. Tyndall has stated that if a falling body be arrested in its downward tendency, the force is not lost, but converted into heat; and were the earth's motion suddenly stopped, the heat developed would raise the temperature to such a degree that the elements thereof would be dissipated in vapour. In this way, it may be, the prediction will be fulfilled, "the earth also, and the works that are therein, shall be burned up."

The fact that force may be converted into heat has given rise to the theory that the heat and light given out by the sun result from meteoric bodies falling on its surface. The conversion of muscular force, he says, into heat is strikingly shown in the concussion of flint and steel, in the old method of obtaining a light, and energetic chemical union, being attended with the evolution of heat, may be regarded as produced by the falling together of atoms at a high velocity. He further adds that heat, whenever evolved, can be made to reproduce the exact amount of force that was arrested in its production. Thus the union of a pound of coal with about two pounds of oxygen evolves an amount of heat capable, if properly applied, of raising a hundred pounds' weight to a height of twenty miles. The coals raised every year in England amount to 84,000,000 tons, which, were they all applied to the production of force, would be equal to 108,000,000 horses working constantly; or a pound of coals may be regarded as equal to the force of 300 horses working for one minute.

It is by such seemingly simple means as these that nature effects her mighty changes on the earth's surface—one principle, one power alone, pervading the material universe. The laws that govern this power have been untiringly sought out by man, and some few of them he has attained to a knowledge of, and rendered them available for many useful purposes. To these others may yet be added through the spirit of investigation that has been of late years awakened. Nor should this be checked, since the more we know the more we find there is to be known. The mind of man is only rightly employed when acquiring knowledge, and it is astonishing how much by culture it may be made to imbibe; and yet, after all, how little do we really know! A high authority has said, "It is an important truth that those who do the most seem to find the most to do. Men's performances are regulated, in the main, by their will; and if they fall short, it is not because Providence has denied them the ability, so much as that their inclinations are defective." Still are discretion and judgment requisite, for all are not alike endowed, and Milton tells us,

> "Knowledge is as food, and needs no less
> Her temperance over appetite, to know
> In measure what the mind may well contain;
> Oppresses else with surfeit, and soon turns
> Wisdom to folly, as nourishment to wind."

Nevertheless, limiting the mind in its inquiries leads to its becoming contracted and narrowed in its views; and hence the value of general information. Rightly has it been said by our premier that everything belonging to the profession we have entered upon the acquirement of a knowledge of—should have our intense and preferential study, but on no account should we omit acquiring general information upon other matters whenever opportunities present themselves for doing so. Whatever may be the profession which a man enters, he will perform the duties of that profession better by having general knowledge; and that generality of knowlege will not interfere with the successful study of what is necessary for that particular division which he determines to become acquainted with.

Nor must we look to mere motion, whether continuous or interrupted, as the sole cause of all the beauty and order we see around us. There are other means to accomplish the ends in view. Among these may be prominently placed co-operation, which, of course, can only be the result of union. Thus the arts and sciences, which are but a transcript of nature, materially contribute to each other's advancement, and the nearer they approach her the more perfect they become. We do well, therefore, to imitate her. On this account it is we have always advocated union, assured that there is no real progress without it, and we hope we can perceive some indications of this, which is in every sense so desirable, being realised by us. The beneficial effects of union may be compared to the prismatic colours of the sun, each different from the other, and each possessing its own peculiar properties, but by combination they form one bright and clear light, which not only renders all objects visible, but gives to all things life and beauty. It is time for us to be up and doing, when every division of knowledge gives such proof of the onward march of mind. Life, at the longest, is but a brief space—

> "'Tis as the falling of a leaf,
> The dropping of a tear."

It is not wise, therefore, idly to sport away time, of which life is made up, but usefully to employ it, remembering that past time can never be recalled—once gone, it is gone for ever.

OPENING OF THE SCHOLASTIC SESSION AT THE ROYAL VETERINARY COLLEGE.

We would remind some of our readers of the introductory address to be delivered at Alma Mater on the 5th instant, by Professor Tuson. We like the return of these periods. They are centres of attraction and incentives to reunion by the gathering together again of those who were once associated in their studies, but whom the stern duties of life may

have since far separated. The reminiscences they awaken often call forth the nobler feelings of man, and knit more intimately the bond of professional friendship. We would, therefore, that at these anniversary meetings a goodly company should continue to assemble, and an interchange of sentiments be freely entered upon. Too many opportunities for this purpose do not present themselves among us as a body, and hence the chilling formality that now and then is seen to exist. No hearty recognition, apparently, is given, but a seeming fear is manifested lest the bounds of etiquette should be overstepped. Let us not be mistaken—we have no wish to disregard the courtesies of society. Far from it, our feelings tend to the very opposite; but we are convinced that it is by a cordial union alone we are likely to enhance our social position, to elevate the profession of which we are members, and to show that no schism exists among us, but, on the contrary, a reciprocity of good will. Still it is no spasmodic or galvanic life we want, but social organic life pervading the whole mass. In the language of Burns, we would ask—

"Should auld acquaintance be forgot?"

And we answer, no. It is true, the recurrence of these meetings reminds us of the swift passing away of time, and tells us also that we are a year older than we were; nevertheless this may prove a salutary admonition to most of us, since this world is not our home, it being only a probationary state for the employment of talents with which we have been entrusted; and although many of the events of life may be dream-like and fugacious, yet has each his allotted task to perform, and he only fulfils the end of his existence here who conscientiously and heartily does it.

"Labor ipse voluptas."

Extracts from British and Foreign Journals.

PROGRESS OF CHEMISTRY.

The following constitutes the greater part of the excellent address delivered by Professor Williamson at the late meeting of the "British Association for the Advancement of Science," held at Newcastle-on-Tyne.

"One of the most remarkable features of the progress of our science is the rapid rate at which materials have been accumulating by the labours of chemists in the so-called organic department of the science. The study of the transformation of organic bodies leads to the discovery of new acids, new bases, new alcohols, new ethers, and at a constantly increasing rate which is truly wonderful. Some of these new substances are found to possess properties which can at once be applied to practical manufacturing purposes, such as dyeing, &c., but the greater number of them remain in our laboratories and museums and text-books, and serve to teach us new instances of the combining forces of matter. The influence of this rapid growth of materials upon our knowledge of principles and laws of combination which constitute the science of chemistry has been simultaneous with the discoveries of the materials themselves, and the material and intellectual progress of organic chemistry have gone on so regularly hand in hand that it is impossible to say which has done most in helping the other. It is, accordingly, observed that the science has been simplified by every important addition to her materials; instead of isolated, unmeaning substances, with formulæ so complex and unintelligible as to be troublesome to chemists and truly distressing to learners, we have now definite and intelligible families of bodies, of which the members are most harmoniously united together by some law of composition, and whose connection with neighbouring families is similarly clear and satisfactory. New discoveries are constantly coming in to fill up the gaps which still disfigure our growing system. In mineral or inorganic chemistry there is not the same scope for discovery at present, inasmuch as the elements which belong to it do not combine in those numerous proportions which occur among the chief elements of organic bodies. But yet mineral chemistry has not been standing still, for even the heavy

metals, most remote in their properties from those volatile and unstable substances of organic chemistry, have been got in many instances to combine together, and the organic metallic bodies thus formed have not only proved most valuable and powerful agents of decomposition, but they have served as a connecting link between the two branches of chemical science. A system of classification of elements is now coming into use, in which the heavy metals arrange themselves harmoniously with the elements of organic bodies, and in accordance with the principles which were discovered by a study of organic compounds. It is now many years since the attention of chemists was directed by a French professor to some inconsistencies which had crept into our system of atomic weights. Gerhardt showed that the principles which were adopted in fixing the atomic weight of elementary bodies generally required us to adopt for oxygen, carbon, and sulphur, numbers twice as great as those generally in use for those elements. The logic of his arguments was unanswerable, and yet Gerhardt's conclusions gained but few adherents. It is to be observed that for some years Gerhardt represented chemical reactions by so-called synoptic formulæ, which took no account of the existence of organic radicles. These synoptic formulæ represent in the simplest terms the result of a chemical reaction, but they give no physical image of the progress by which the reaction is brought about. The introduction, in this country, of the water type in connection with poly-atomic as well as mon-atomic radicles, was found to satisfy the requirements of the synoptic formulæ. Gerhardt was the first to adopt them from us. He gave, in his admirable 'Traité de Chimie Organique,' a system of organic chemistry on that plan, and his book has been of immense service to the development of our science. The extension of these principles to mineral chemistry had been commenced in the cases of the commonest acids and bases, but their general introduction met with difficulties, and sometimes seemed wanting to their complete success. I must now travel southward for a short time, and ask you to accompany me to that sunny land of glorious memories, and to its southern dependency—the island of Sicily. It was reserved for Professor Cannizzaro, of the University of Palermo, to show us how the remainder of the knot could be untied. He argued, upon physical as well as chemical grounds, that the atomic weight of many metals ought to be doubled, as well as those of oxygen, sulphur, and carbon. His conclusions are confirmed by the constitution of those organo-metallic bodies which I mentioned just now, and it

certainly does seem to supply what was still wanting for the extension of our system of classification from the non-metallic elements to the heavy metals themselves. The elements are now arranged into two principal groups:—1st. Those of which each atom combines with an uneven number of atoms of chlorine or hydrogen. 2nd. Those of which each atom combines with an even number of atoms of chlorine or hydrogen. Like every classification founded upon nature, this one draws no absolute line, as some elements belong to both classes. The first group includes the non-atomic elements of the chlorine family, the triatomic elements of the nitrogen family, hydrogen and the alkali metals, silver and gold, in all about eighteen elements. The usual atomic weights of these are retained. The usual atomic weights of all the other elements, biatomic, tetratomic, &c., are doubled. This second group includes the oxygen family, carbon, silicon, and the alkaline earths, the metals zinc, iron, copper, lead, &c. Every step in our theoretical development of chemistry has served to consolidate and extend the atomic theory, but it is interesting to observe that the retention of that theory has involved the necessity of depriving it of the absolute character which it at first possessed. Organic compounds were long ago discovered containing atoms of carbon, hydrogen, and oxygen, in proportions far from simple; and the atomic theory must have been abandoned but for the discovery that the atomic or rather molecular weights of these compounds correspond invariably to entire numbers of the elementary atoms. We now use the term molecule for those groups which hold together during a variety of transformations, but which can be resolved into simpler constituents; whilst we receive the word atom for those particles which we cannot break up, and which there is no reason for believing that we ever shall break up. Amongst the most brilliant extensions of our means of observation have been the researches in spectrum analysis. The application of this beautiful method to the investigation of minerals has already led to the discovery of three volatile metals which had previously escaped observation, whilst its extension to the investigation of the light which reaches our planet from the heavenly bodies has led to the recognition, in several of them, of elements identical, in this respect at least, with some of our elements in this earth. An eminent French chemist has recently taken occasion, in reporting the results of some researches on the new metal 'thallium,' to volunteer insinuations against Mr. Crookes' claim to that discovery. M. Dumas considers it corroborative of his views that Mr.

Crookes did not refer the consideration of his claims, on the first opportunity, to a jury of gentlemen formed for examining products of manufacturing industry at the National Exhibition of 1862. I have felt it my duty to allude publicly to this proceeding, because it occurred in a report of a commission of the French Academy, published by the order of that distinguished body. Before proceeding from the scientific and intellectual progress of chemistry, I must beg leave to refer briefly to the educational efforts of the progress. Little, indeed, would our conquests over nature avail us if they are only known to the systematic cultivators of science, and only used by them; and unless the popular dissemination of knowledge keeps pace with its extension, the chief fruits of that extension will be lost. It would be unjust to deny that some important steps have been taken of late years by various governing bodies in this country towards giving to experimental science a position in national education; but these steps are only the beginning of a reform in education which must go much further in order to be effectual. In illustration of what has been done, I may mention the admission of chemistry and physics into the list of subjects of examination for various Government appointments, civil and military; but the small value which the framers of the schemes placed upon these sciences, compared to mathematics, is but too plainly shown by the small number of marks which they assign to the utmost recognised proficiency in them; so that the effect of the recognition is tantamount to saying—We can't help acknowledging these sciences, but we want to encourage the study of them as little as possible. The medical corporations, who influence the studies of the rising generation of practitioners by their examinations, have not only recognised the necessity of a thorough knowledge of chemistry, but many of them require the knowledge to be acquired in the lecture-room, and partly also in the laboratory. The University of London is expressly to be noticed for the beneficial influence which it has exerted in this direction in its medical examinations; but more particularly for the institution of new degrees of bachelor and doctor of science, which acknowledges, for the first time in this country, the physical and natural sciences as entitled to equal recognition with classical and mathematical studies for purposes of general education. These influences have, no doubt, contributed materially to the introduction of chemical instruction, and even of practical chemistry, into junior schools, which has been going on so extensively of late years. It is, how-however, consolatory to observe that a more powerful in-

fluence than any of these is at work, viz., the popular appreciation of its real value gradually raising physical science to the prominent place in national education which it is destined to occupy. If education is intended to prepare young people for a life of usefulness, in which their various faculties may be employed to the benefit of their fellow-men, and consequently to their own, there can be no doubt of the value of teaching them to observe, to recollect, to arrange the phenomena of the physical world, and to apply the knowledge and skill thus acquired to practical purposes. No phenomena that can be brought within the observation of everybody by inexpensive experiments are so simple in their nature, no reasonings more definite and tangible or more easily controlled by special observation than those of chemistry, and the science affords, probably, scope for a more thorough training of the various faculties of the mind than can be supplied to schools by any other means. Among the chemical arts much has been doing, but, as usual, in a quiet, undemonstrative way. First and foremost among improvements I must mention the introduction into one manufacture after another of those admirable furnaces invented by Mr. Siemens, and generally known as regenerative furnaces. Whether we consider them from the point of view of the economy of fuel, or whether as affording the means of attaining temperatures beyond the range of other furnaces, there can be no doubt of the immense value of this invention. Heat is the great source of power in almost all our dealings with inorganic matter, and I have not the slightest doubt that the power over heat given by these regenerative furnaces will revolutionise many a chemical art. The manufacture of iron, and its subsequent treatment for the removal of impurities, has been of late years the subject of many experiments. Various plans have been proposed for avoiding the injurious effects of the mineral impurities of our coal, by using gas for the reduction of the iron ores. In this country, however, the manufacture of cast iron is carried on in such vast quantities that changes in the processes must meet with great resistance. The laborious and expensive process of puddling hitherto adopted for burning out the carbon from cast iron is being gradually superseded by one or other of the following — either by treating the molten pigs with oxide of iron until the carbon is removed as carbonic oxide, or by Bessemer's process of blowing air through the molten cast iron. In either case it is desirable to add some carbon to the malleable iron, in order to render it more fusible, and for this purpose the best material is the maganiferous car-

buret of iron, known by the name of 'Spiegeleisen,' of which enough is used to make a low steel with about ½ per cent. of carbon. One of the most interesting novelties in metallurgy is the manufacture of aluminium, now carried on, for the sake chiefly of its alloy with copper, by the distinguished gentleman who holds the office of Mayor of Newcastle. The mechanical properties of this so-called aluminium bronze give it great value, and it seems likely to find much favour for its appearance. Mr. Bell has also rendered no small service to science by collecting and preparing a large quantity of that wonderful new metal, thallium. Among alloys, a variety of brass containing a small quantity of iron has recently attracted considerable attention. The alloy is by no means new, though hitherto known but to few persons. It combines tenacity with elasticity to a remarkable degree, and can be easily forged. Most of the members of the section are probably aware of the admirable series of agricultural experiments which have been proceeding for the last twenty years, under the directions of Mr. Lawes, of Rothampsted; yet many are probably unaware of the vast importance of the results already established by those experiments. Few things are, perhaps, more difficult than to conduct scientific experiments in any practical art, like farming, to find how the resources which science discovers can be profitably turned to account, or how the defects which theory points out in ordinary working processes can be profitably remedied. It is almost proverbial that the greater number of persons who attempt the introduction on their farms of plans suggested by abstract science, succeed only in finding how to lose money. It does, indeed, require a rare combination of enthusiasm with caution, of knowledge of theory with practical experience of the conditions of ordinary working, to carry such experiments to a definite and useful issue. Such rare combinations of qualities have existed in Mr. Lawes, and when we recollect that by associating Dr. Gilbert with his labours, he obtained the co-operation of an able and accomplished chemist, we have no longer reasons to wonder that the result of twenty years' continuous experiment, conducted on an ample scale, with the most scrupulous care and systematic order, should have led to the establishment of results so numerous and important as to secure for Mr. Lawes the highest rank among the founders of scientific agriculture. In speaking of the chemistry of agriculture, I cannot omit alluding to the writings of Liebig, which have rendered such important services, by bringing vividly before the English agriculturists what was known of

the chemistry of farming, and several ingenious and suggestive theories relating to practical agriculture. In the introduction to the last German edition of his 'Agricultural Chemistry,' Liebig refers in terms of studied disrespect to the investigations of Mr. Lawes, and while misquoting a paragraph in one of Mr. Lawes' publications, endeavours to convey the impression that that gentleman was unacquainted with the correct use of the term 'mineral,' and had misunderstood Liebig's mineral theory, which he is generally considered to have disproved. I mention this circumstance with pain, and have no doubt that all who value Liebig's truly important scientific labours will regret it as much as I do. Another practical question which science has latterly brought prominently before the attention of the public is that of the utilisation of the drainage of towns. It is estimated that the quantity of nourishment for plants wasted in London alone in this form is worth about a million sterling per annum; but this valuable material is contained in so large a quantity of water, that no plan has come into working for separating it out profitably for use. Some persons are of opinion that the sewage might with advantage be conveyed through pipes for use in the fields, especially on meadow land, to which it is most easily applicable. Baron Liebig has written a letter on the subject, which is forwarded by Alderman Mechi to the *Journal of the Society of Arts*, containing a proposal to mix the liquid with superphosphate of lime before distributing it, by which he considers that the value of the constituent already contained in the liquid will be practically increased. It is, however, not likely that the opinion of a chemist will decide the authorities to adopt an experimental scheme of the kind, as it is really rather an engineering and commercial than a chemical question. The practical test of value commercially is how much an article will fetch, and the data of this kind before us does not lead to the anticipation of a profit at all approaching to what theory suggests from the sale of this refuse. At Croydon (a town of about 18,000 inhabitants) it appears that the sewage is sold for something over a thousand per annum. Another refuse material which has already come to possess great value is coal tar. Not only is our chief supply of ammonia, the food of plants, derived from that source, but those brilliant and varied colours which are now so much in use for dying silk also owe their origin indirectly to the same source. There is, perhaps, no more striking instance of the benefits which ultimately arise, even to the manufacturing arts, from every complete investigation of chemical substances, than is afforded

by those beautiful dyes which have sprung up to-day from aniline, which yesterday was a chemical novelty in the hands of a first-rate investigator."—*Chemical News.*

THE IMPROVEMENT OF AGRICULTURAL HORSES SUITED TO THE WEST OF ENGLAND.

By Professor Brown, M.R.C.V.S.

The economical application of motive power to the operations of husbandry is a very serious question to the farmer of the present day. The great problem now requiring solution refers to steam-cultivation; but in whatever way it may be ultimately decided, there is no reason to doubt that horses will always be an important and indispensable portion of the motive agencies. However active the imagination may be in originating expedients and suggesting the application of new forces, it is not possible to conceive a piece of mechanism so portable and so perfectly under control as to supersede the agricultural horse, or in any great degree to officiate in his stead.

As the great value of the horse is in general terms admitted, it is a somewhat singular circumstance that so much less attention has been paid to his production and preservation than to that of the other kinds of live-stock on the farm. On comparing the uncultivated breeds of cattle, sheep, and pigs, with the improved varieties, we at once recognise and appreciate the successful results of a patient application of the principles of breeding and management; but turning our attention to the horses, probably upon the same farm, our admiration is very likely to be exchanged for regret that so integral a part of the farm stock should bear such unmistakable evidence of neglect and mismanagement.

In the endeavour to account for the comparative indifference with which the horse upon the farm is regarded, we are required to remember that, while the improvement of flocks and herds is in intimate association with the culture of the soil, the horse seems, in some way, to take an isolated position, being apparently estimated in the light of a motive power in connection with the machinery of the farm, rather than as a part of the live stock whose production and improvement come within the province of the agriculturist.

There are, no doubt, many reasons why farmers in general find it more convenient to purchase these animals than to

breed them. They are, in the first place, not so uniformly marketable as cattle, or sheep, or pigs. There is greater expenditure of time and labour attendant upon their production, and a much longer period is required before they are in a fit condition for rendering active service; and even putting out of the question acute and fatal disease, certain loss attends their unsoundness. A defective constitution, bad confirmation, a vicious temper, or any derangement which interferes with the animal's capabilities, will render a horse worthless; while a much more serious defect would only condemn any other of the farm-stock to the butcher at a remunerative price to his owner.

During gestation much care is necessary in the treatment of the mare. A reasonable time of rest is required before and after parturition; while a neglect of these precautions is often attended with consequences of an unfortunate character to the mother or the offspring. Under all circumstances, therefore, there is little cause for surprise that the majority of farmers confine themselves to the cultivation of what may be precisely called "farm stock," and leave the production of horses to the professional breeder, or to those whose time and capital are often thus employed from a fondness for the occupation.

There is probably little reason to regret that among farmers generally horse-breeding finds no favour. Knowing what we do of the very heterodox opinions upon the subject, or, even worse, the absence of any opinion or thought at all—save what is expressed in the general conviction that anything in the character of a mare that has been a valuable animal upon the farm will, in spite of her present condition, answer perfectly for stock purposes, *if the proper horse be selected*—we feel inclined to estimate the farmer's numerous and well-founded objections to engage in the practice of breeding as so many points in favour of the animals in question, for their interests would suffer in the hands of those who have not even a definite purpose in view, and who, acting without fixed principles, could hardly effect very great improvements.

Successful cultivation of all kinds of stock presupposes the existence of a decided intention. No breeder has arrived at satisfactory results by accident; his primary act must consist in determining what conformation, what constitution, and what special characteristics, shall constitute his ideal. Probably the originals are ungainly, long-limbed, rough-coated, of slow growth, and with a digestive system requiring an abundant supply of food, yet not contributing to a proportionate increase of carcase. The ideal is the reverse of this

—an animal distinguished by his compact form, fineness of coat, rapid growth, and great power of assimilation, or, in plainer terms, an aptitude to lay on fat and flesh. The transition from one state to the other is not the work of a single generation; such changes are gradual, but they are at the same time sure. No common judgment is called into play in the application of the principle of selection; nor is perseverance less required. Experiments that seem to have been conducted in a manner to ensure success will fail, intentions are frustrated on the verge of fruition, and what were received as laws are found subject to exceptions. Trifling and unsuspected causes interfere to render well-arranged plans abortive, and often more than one life must be devoted to the perfection of a single result. It is not our province to inquire to what extent the principle of natural selection has produced species and varieties, but that in nature changes of animal form and character have followed alterations of the conditions of existence is beyond all dispute. We decline to reason upon those changes outside the limits which experimental science assigns to us, nor do we desire to incur the responsibility of assuming positions which, however apparently legitimate, are of too momentous a nature to be accepted while one link in the evidence is wanting. Within these limits we are justified in asserting the possibility of modifying the habits and conformation of animals, by so gradually arranging the external circumstances that the conditions of their existence shall tend to the development of the qualities and characters we desire.

To make this proposition plain we may offer an extreme illustration. Suppose some races of herbivorous animals to be situated in a locality where plants, their natural food, should gradually decrease, until they ultimately ceased to be available for the animal's sustenance—assuming at the same time that the plant-eating animals continued to increase while their food was diminishing—it is possible to imagine that, during the scarcity of food, hunger, gradually becoming more urgent, would prompt them to consume the flesh of smaller animals that died or were accidentally killed. We may easily conceive that, as hunger advanced to starvation, the weaker subjects would be destroyed and consumed by the stronger. The young, following the example of their parents, would grow with an acquired taste for unnatural food, and with predatory habits becoming more marked every succeeding generation, until at length they would become perfectly adapted to those new conditions of existence under which they had been forced to live, or otherwise to die of starvation,

which they certainly would not willingly submit to so long as any kind of food could be obtained. In this manner, without any sudden or violent change, the digestive organs, as well as the external form, might be supposed to experience remarkable alterations; the strongest animals would first obtain an easy prey, then would come war between the strongest survivors for the mastery; the victors would inevitably be parents to the greatest number of progeny as well as the strongest in physical constitution; and thus, by natural selection and changed external circumstances, herbivorous or herb-eating animals might possibly become carnivorous or flesh-feeders, in every respect most opposite to their progenitors.

In this hypothetical example there is nothing new or original, nor does it assume more than may be fairly granted without doing violence to the knowledge we already possess of the changes that have taken place to a minor extent under favorable circumstances. It is not probable that the conditions assumed will ever occur; but the position, however conjectural, tends to illustrate what is meant by the influence of the conditions of existence and natural selection in the production of new varieties. Allowing the influence of natural circumstances to be so decided, we are led to inquire into the comparative effects of artificial changes, or the voluntary and intentional modification of the conditions of existence, when natural agencies are insufficient to effect what we require, or may even tend to the opposite results. Isolated instances are on record showing how horses have been gradually educated to feed on flesh. Dogs, we know, naturally carnivorous, often live mainly on herbaceous food. Stock-breeders are well aware that a peculiar excellence or particular defect is likely to be perpetuated in the progeny; but all these illustrations are barren, because unconnected; they concern the life of an individual, and consequently produce little or no permanent result. Artificial modifications depend upon individual judgment or caprice. Conditions intentionally changed are usually temporary in duration; but in nature the variations affecting the climate, the products, and consequently the animal life of a country, are slowly developed and constant, and their influence is beyond all comparison more decided and extensive. Notwithstanding that natural changes cannot be adequately represented by any intentional modifications established for the purpose of inducing such alterations of animal structures and qualities as we may wish to effect, there is much to be said in favour of the system of artificial selection; not merely the application of a single

rule, but the system based upon the knowledge of the effects of all the surrounding conditions of existence. Taking advantage of the changes we have observed to occur under natural influences, learning by patient inquiry the methods of their production, and testing our conclusion by experiment, we arrive at last at a system, not perfect, but founded upon correct principles, and capable of indefinite extension.

Although the history of the past presents few data on which to found a method, there is a lesson of patience to be learned from it, as there is one of hope in the present. Our breeders, in the absence of comprehensive and just principles of the science, acting according to the dictates of common sense, and guided by experience, have in defiance of repeated failures and under numerous disadvantages, done much; still better, they have taught us to infer how much more may be done by persevering inquiry into and proper application of laws whose existence is hardly yet recognised.

From time immemorial the science and practice of breeding have been based upon the maxim "like produces like." The idea conveyed by this dogmatic aphorism is not very definite. If it be intended to assert that the general characteristics of the parents are transmitted to the offspring under ordinary circumstances, nothing is added to what has always been perfectly evident in practice; but if it be contended that all the qualities are under all conditions so transmitted, experience at once opposes itself to the proposition. The breeder who confines himself to the selection of parents possessing all or most of the qualities he requires to cultivate may, up to a certain point, succeed; but beyond this there seems to be a peculiar tendency to revert to the original type. This tendency is particularly remarked when the plan of breeding in and in is pursued; and is corrected by selecting animals altogether disconnected, for the purpose of crossing.

The breeder's maxim is seen in this case to be open to objection, and a further study of the changes produced by various causes acting at the same time, will prove how often changes affected by the alterations in surrounding circumstances lead to the transmission, in an exaggerated or a defective degree, of the qualities of the parents.

Education, also, which is one of the conditions capable of infinite modifications, would seem almost to have the power of originating faculties which did not pre-exist, but which, when called forth, are transmitted and even exaggerated. But careful selection and attention to all the requisite conditions, and among them a continuance of the educating process, seem to be indispensable to the perpetuity of the faculty.

How long such artificial requirements would resist the influence of a reversion to natural conditions, either sudden or gradual, nothing but experiment can decide; but it is nevertheless interesting to speculate upon the time during which our sporting dogs—pointers, for example—would retain their peculiar instincts, if compelled to resume their free state and seek their own prey. Their carefully cultivated faculty might render them valuable allies to their less scrupulous companions; but by themselves they might be expected to starve in the exercise of their accomplishments, unless, as is probable, the instinct of preservation might tempt them to violate the instinct of their artificial nature, and save themselves at the expense of their education, by appropriating the game they had been taught to indicate with such wonderful pertinacity and forbearance.

Giving fair prominence to the evidence that has been advanced, we venture, therefore, to suggest, in place of the exceptional position contained in the aphorism "like produces like," the more accurate if less concise proposition that the cultivation and development of faculties and qualifications, mental and physical, depend upon the influence of numerous conditions, including the possession of the desired qualities in some degree by the parents; and the subsequent exposure of the progeny to those conditions of existence which are likely to assist in the development of such qualities; and, as a matter of the last importance, the removal of all those circumstances which would be likely to exert an antagonistic influence.

This proposition is capable of indefinite amplification, but a simple illustration will suffice to render it practically clear. Suppose it to be an object to produce a race of cart-horses with legs free from the long, coarse hair characteristic of the heavier breeds. In prosecuting this intention, animals with the finest limbs would be first sought for as parents. The progeny would in all likelihood show very little improvement; and if allowed to remain untended, exposed to wet and dirt, in short, treated as such horses usually are, it is quite certain that an abundance of coarse hair and a thick integument over those portions of the extremities most affected by these causes would be the result. On the contrary, supposing the young animals to be carefully preserved from objectionable influences, their extremities kept dry and clean, the long, coarse hair constantly and systematically pulled out in the ordinary way of grooming (by dipping the fingers in powdered resin, which gives an adhesiveness that facilitates the removal of the hair without inflicting any pain,

as only a few fibres are taken at a time)—if, during the residence in the stable, the same care be continued and a proper protection from cold atmosphere be afforded, a fineness of coat and general improvement in appearance would be reasonably expected to follow. Pursuing this plan with diligence, and constantly exercising the greatest care in selection, our object would ultimately be attained. We are not contending that agricultural horses are to be submitted to the same system of management which is considered to be adapted to the race-horse or hunter; it is our object to explain the nature of those influences which oppose themselves to the improvement of the so-called coarser breeds, and to gain, if possible, a general assent to the conclusion which a fair examination of the evidence will establish, to wit, the inutility of a careful selection of proper parents, possessing in some measure the faculties we desire to improve, while our general system of management is in direct opposition to the cultivation of those faculties, and tends directly to a return to the original condition. Thus, by successive alternations of two systems—one advancing and the other retrograding—we succeed only in maintaining a mediocrity in the results.

Passing from these preliminary but nevertheless important points, we proceed to the statement of our subject. The immediate question proposed for consideration refers, in a particular manner, to the breeds of agricultural horses adapted to the West of England. In order properly to examine the proposition in detail, it is desirable, first, to determine as nearly as possible the boundaries of the prescribed district, so that we may be enabled to ascertain the general geological features which give character to the soils, upon whose nature the agricultural peculiarities of the country will mainly depend.

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

THE EFFECTS OF ABSTINENCE AND INSUFFICIENT FOOD IN ANIMALS.

(*Continued from p.* 577.)

Its composition, which I obtained from Professor Wurtz, was as follows:—Water, 722·9; fibrine, 3·6; albumen, fat, and organic matter of the serum, 126·5; globules, 107·3; salts, 39·7, in 1000. In comparing the above with that of the normal blood of the talipeds, as given by Simon, Nasse, Andral, and Gavarret, it will be seen that in some respects this starved animal had a real advantage over those fed in the regular way. The simple comparison of the analysis points it out clearly enough, but it would have been better defined had the analysis been made at the commencement of the experiment, as well as at the end. I take Nasse's analysis of the normal blood of the horse.

1st. Normal Blood.		*Blood of the horse deprived of food.*	
			2nd Analysis.
Water	804·75	Water. . .	722·90 —
Fibrine	2·41	Fibrine . .	3·60 —
Albumen and organic matter of the serum . .	69·52	Albumen and organic matter of the serum	126·50 —
Fatty matter . .	1·31	Fatty matter .	— 24 31
Globules	117·13	Globules . .	107·50 —
Salts	6·22	Salts . . .	39·70 —

Thus, the blood of this horse, after thirty days' deprivation of food, instead of being poorer, as theory might lead one to suppose, was, on the contrary, richer in fibrine, albumen, and fatty matter, but, above all, in salts, than the ordinary blood of the horse. All the plastic materials, with the exception of the globules, were in greater proportion, the latter having decreased by about one tenth. This fluid was, therefore, all that was required in respect to quantity, quality, temperature, and density. It was in excellent condition to excite the nervous system, maintain the nutrition and the secretions. We shall find the solution of these facts in the sequel, and also find that we must not expect to meet with them under all circumstances. It was not only the composition of the blood it was important to study in the case of the

horse submitted to the experiment, but also to analyse and compare the lymph with that in the normal state. To obtain a sufficient quantity, I inserted a tube in one of the lymphatic vessels which runs alongside the carotid artery; the spot selected was about the middle of the neck. One of my pupils undertook to collect it during six days. Professor Wurz analysed it, and, compared with the normal lymph, found it to be as follows:

Water	913·520	955·384
Fibrine	0 085	2·200
Albumen and organic matter of the serum	75 928	33·310
Sugar	1·340	1·145
Fatty matter . . .	0·683	0·240
Salts	8·452	7·410

This fluid is, consequently, richer in plastic elements. There is also more albumen, more fatty matter, more salts, and almost as much sugar, as in the lymph of horses fed in the usual way, only there is less fibrine. Its composition is in harmony with that of the blood; this is as it ought to be, the first of these fluids being at the same time a portion and a product of the second. Let us now pass to another point. The horse in question, during the thirty days he was deprived of food, only consumed 2666 grammes of his substance, for the renewal of the blood and to repair the loss by the secretions. This small internal ration sufficed to maintain the regular animal heat. Everybody knows that one of the most indispensable conditions of animal life is that of maintaining the temperature of the body at a certain degree, which is constant. When the temperature of the body falls to 24 or 25 centigrades, death takes place. As long as the combustible matter abounds in the system, the calorification is active; as soon as it decreases, the calorification languishes. This has not been the case in this instance, as the muscular and adipose systems have been able to furnish an adequate quantity; thus the horse in question had maintained his temperature to a degree from the first to the thirtieth day of his deprivation of food with so very slight variation, that it is not necessary to mention it here. All these indications were taken by a metastatic thermometer, very easily affected, constructed by M. Walferdin. The persistence of the animal heat at the usual degree is exceedingly curious, it having been overlooked by all experimenters up to the present time, they not having selected fat animals for their researches; but it cannot be considered as constant, as it is subordinated by the presence of fat. As long as the adipose tissue exists in an animal de-

prived of food, the temperature does not decrease; but as soon as the fat is exhausted it quickly falls to 24° or 25°, when death speedily occurs. Here a slight difficulty presents itself to the mind. When it is considered that from the experiments of M. Boussingault, and those of MM. Lassaigne and Bouley, a horse of middle size consumes about 2500 grammes of carbon for his calorification, the question is how, with 787 grammes of carbon and 115 of hydrogen contained in the internal ration of this horse, the results should have been exactly the same. This is easily explained. Evidently the animal that burns in twenty-four hours 2500 grammes of carbon must produce three times the amount of caloric than the one that only burns 787 grammes, but the excess in the first is carried off by the pulmonary and cutaneous perspirations. There is not the least doubt that these exhalations have not the same activity in both cases. On an average, according to Boussingault, the quantity of water which is given off by the skin and the lungs is 6 kilogrammes. This is about three times the amount of that which the horse deprived of food could have lost by this double exhalation. The water drank by the latter, added to that in the organic substances destroyed for its support, represents only 3 kilogrammes, with an approximate deduction of 1000 grammes, carried off by the secretion of the urine; the perspiration had only 2 kilogrammes to eliminate. Consequently, where the production of calorie is three times the amount, there is also the same consummation, by which the balance of the temperature is established between the two cases. This is how the alimentation has been effected in this horse deprived for thirty days of food; though it had then consumed the fifth part of its weight, there was still enough left to maintain life for a long time, as the following statistics will show:

	Kilogrammes.
Weight of the body	325·003
Shows blood	27·000
skin and hoofs . .	16·000
bones and cartilages . .	45·000
muscles and tendons . .	159·000
free fat . . .	19·500
viscera . . .	25·570
gastro-intestinal matter .	26·250
loss	6·680
	325·000

I must here observe that in this horse every part had decreased, with the exception of the brain and the spinal cord, the skin, medullary part of skeleton, the adipose tissue, the liver, and the other glands, and the heart itself, all . d

undergone reduction in their weight and volume, by furnishing their quota to the alimentation and combustion. The numerous statistics made on the talipeds under similar physiological conditions would enable us to appreciate this reduction of the different parts of the body, if I had time to report them. Nevertheless this wasting had not reached to one half of its numerical weight; there was still some fat left under the skin about the upper part of the neck, and in the inguinal region and the thighs. In the abdominal cavity there was found a layer of fat from 4 to 5 centimètres in thickness, and weighing with some from the chest 14 kilogrammes. It existed also in tolerable quantity in the interstices of the muscles and in small globules in the liver. These being the effects of deprivation of food in the healthy horse, the question is, are they the same in other animals? It is a common fact that the carnivora can better support deprivation of food than the herbivora; habituated to irregular meals and often exposed to long fasting, they are naturally prepared against accidents which are very rare in the others. Their digestive organ, not very large, does not suffer from want of *lastage*, and each of their meals furnishes them for a long time with materials for the reconstitution of the blood and the support of respiration. When external means of alimentation fail, they find in themselves an aliment in every way resembling it; the origin of this aliment is change, but the regimen is the same. On the contrary, the herbivora, when deprived of food, really change their mode of alimentation; they have a sort of apprenticeship to perform to accustom themselves to animal food and their own flesh, instead of vegetables. I have followed the example of Magendie, and by a painful obligation imposed on the physiologist, deprived dogs and cats of food in order to ascertain the modification produced by it in the organs, and the rhythm of the function. Its duration and effects have shown great variations. An enormous fat cat, weighing 5838 grammes, was confined in a large hamper closely shut for twenty-nine days, without food or drink. At the end of that time she had lost 1733 grammes, a little more than one third of her weight, 59 grammes 7 decigrammes in every twenty-four hours. Consequently she consumed 16 grammes 22 decigrammes of her own substance for each kilogramme of the mass, instead of, as in the case of the horse, 6 grammes 58. By that means its temperature decreased not more than half a degree. On dissection I still found a good deal of fat under the skin and in the interstices of the muscles; there were 100 grammes in the abdominal cavity. The cells of the liver also contained small drops of fat. The

blood had preserved its normal characters; it contained 139 milligrammes of sugar per cent.; about the usual proportion. The substance of the liver contained not less than 2 grammes 800 milligrammes per cent. Everything, therefore had pursued the same course as in the horse. It was the same with birds. A goose weighing 4800 grammes was deprived of food, but was allowed water *ad libitum;* it lived forty-four days, at the end of which it had lost 2475 grammes, or the half of its original weight; the diurnal loss was 56 grammes 27, 11 grammes, 72 per kilogramme of living weight. In the first thirty-five days the temperature was maintained at 41 centigrades, the day before the last it was 40. After death I arrived at the following statistics:—skin, muscles and blood, weighed 986 grammes; viscera, 254; bones, 419; feathers and horny substance, 179; fatty matters, 446; loss, 41; total, 2325. Thus the fatty matter after death still amounted to one fifth of the weight of the body; the muscular system was not so much atrophied; finally, the liver contained sugar to the amount of 2 grammes 4 centigrammes per cent.

It must not be supposed that what has been the result with this horse, the cat, and goose, would in every other case be the same; very far from it. We have hitherto had to deal with fat animals; with lean ones the result would be very different. I deprived a lean but vigorous horse of food; at the end of a few days the countenance changed, the flanks became hollow, the coat was staring, the strength was lost; he could hardly stand, his walk was staggering; he lay down on his sternum, and soon turned over on his side; the skin and the extremites became cold, cold sweats supervened, and were followed by the convulsions of death. Life cannot be maintained for any length of time when the elements for the reconstitution of the blood and for combustion to maintain the calorification are wanting. At the autopsy we find a poor blood, without sugar, with a clear serum deprived of fat, a black liver, the cells of which contain neither sugar nor fatty matter. The muscles are stringy and flabby, and instead of fat there is only a tissue infiltrated with a yellowish serosity. Even the marrow in the bones has been replaced by a viscous serosity, of a citrine colour. If I submit lean dogs or cats to deprivation of food, instead of living, like the others, for five or six weeks, they speedily become cold, and die in from ten to twelve days, and even in less time. It is still worse if I take a lean fowl or a turkey; after three or four days of inanition they succumb. This is, if I am not mistaken, the great law of abstinence—the du-

ration of life in animals deprived of food, *cæteris paribus*, is always in proportion to the internal power of reconstituting the blood and maintaining the calorification. In fact, we see it in the plan of nature. Those animals destined to undergo deprivation of food are provided against the unavoidable consequences of abstinence. In summer and autumn they profit by the abundance of grass and herbs to accumulate a quantity of fat, which supplies them with nutriment against the time when an arid soil only offers them a scanty pasture. The camels which Pallas saw in the steppes of Asia, reduced in winter to feed on dried reeds, lose their humps, and become frightfully emaciated. The bear, before retiring to hybernate in the clefts of the rocks, has increased his fat by the abundance of honey, grapes, and other ripe saccharine fruits in the autumn. It is not by licking his paws, as Aristotle asserted, that he sustains his long torpor, but by licking his fat muscles, and the substance of all his organs. It is also the case with the marmot, the porcupine, the dormouse, the bat, which could not hybernate if they had not laid in a store of fat. It is to this excess and quality of the matter hoarded up that they are preserved from perishing from hunger or cold.

In stating that the duration of abstinence is in proportion to the provision in the organism, I did not give the entire formula. To complete it I must now add that this duration is also in proportion to the *slowness* with which these provisions are consumed. There are facts within the range of observation and experiment to prove this. We find that a fat horse can live a month without food, and that during that time the blood and the temperature are maintained in a normal condition by an average daily loss of 2666 grammes, and when after that time the horse was destroyed he still had a quantity of fat and well-developed muscles; the small amount of consumption was the essential condition of his longevity. Another horse, very muscular and moderately fat, weighing, twenty-four hours after his last meal, 508 kilogrammes, lost 64 in four days only, viz., 17 the first, 16 the second, 16 the third, and 15 the fourth day; he died on the fifth day, very much more exhausted than the one first experimented on at the end of thirty days. This horse, which consumed itself so rapidly, became glandered; fever therefore existed, and instead of burning 6 grammes per kilogramme of his weight, he burned 31, which was five times more than the healthy horse. With what he consumed in the four days the other would have lived three weeks. Such a contrast between a healthy horse, whose functions

are performed regularly, and one that is labouring under a morbid irritation, is very striking; both these animals live in the same manner at the expense of their own substance, but one consumes any internal ration five times equal to that of the other; this is a highly important fact. If we analyse the ration of the sick horse, according to the chemical data, admitting that fat is consumed in the proportion of 1 to 4 of muscle, we shall find that this animal consumed per diem, 4186 grammes of carbon, instead of 787; 596 grammes of hydrogen, instead of 115; 470 grammes of nitrogen, instead of 75; 135 grammes of salts, instead of 21; and 9600 grammes of water, instead of 3000. This enormous consumption is explained by the febrile excitement. A horse in repose, which, according to M. Lassaigne, burned 2241 grammes of carbon, burned not less than 4887, which is more than double, when he is under the influence of exercise. Fever increases the consumption of the combustible material taken from the interior, the same as exercise increases the combustible matter taken from the aliment; the chemical results are the same under both circumstances. It is evident, moreover, that in the animal in which combustion was so active the pulmonary and cutaneous exhalations must have been very abundant, so as to restrict the elevation of the temperature; and it is not less evident, on the other hand, that the biliary and urinary secretions, the office of which is to evacuate the hydrocarbonic and nitrogenous products, which have not been destroyed by respiration, must also carry off a great proportion of the fixed matter. We find by this that there is a vast difference between a healthy horse and one labouring under irritative fever—one is the calm furnace, where the combustion goes on slowly, and the other the fierce furnace, to which oxygen has free access. In the first, life may be prolonged; in the second, it is soon exhausted. That which happened to the sick horse happens likewise in a great many cases. One is often struck with the rapidity with which some animals lose flesh; they seem to melt away as it were, at sight; in a few weeks, or even days, they cannot be recognised. It is the same in the human subject. It is, therefore, with good reason that the treatment in illness is directed to moderate the febrile reaction. Though we cannot always act on the malady itself, it is advisable to combat its effects. What is called the *medicine of the symptoms* might often find its justification in physiology, if a little more care were bestowed on the relations which exist between maladies and the normal phenomena of the organism. The results obtained by experience on the horse are reproduced with the same cha-

racters on other animals. Dogs, cats, birds, deprived of food, or who, through certain mutilation, are unable to take it, emaciate much more rapidly than those who have been subjected to simple abstinence; birds, in particular, waste with astonishing promptitude. In eight days a goose which had undergone a slight operation was reduced to a state of marasm much greater than the one which died after having been deprived of food for forty-six days. In less than a week pigeons which have no fat are reduced to mere skeletons; the pectoral muscles lose nine tenths of their thickness, and towards the abdomen they are as thin as a sheet of paper. The excitement caused by pain or fever, is not the only thing which accelerates the emaciation during abstinence of food. All excitements, especially such as exercise, work, or exaltation of the instinctive and other cerebral faculties, lead more or less speedily to the same results, and are a cause of emaciation, even in individuals in good health, and who are well and regularly nourished. Shut a rat up in a cage; if it agitates itself continually, it dies in twenty-four hours; if, on the contrary, it is quiet, it will live seven or eight days. Thus it matters not whether the animal is possessed of abundant store of nutritive matter or not; if it consumes it too fast, it cannot support a long abstinence. In youth, when all the functions are in greater activity, absolute diet causes rapid emaciation; children cannot support it, particularly if they are very lively, according to the saying of Hippocrates. Puppies taken from their mother lose all the fat out of their liver in less than forty-eight hours; small birds which are constantly on the wing live hardly two days if they take no food. Nature, in her infinite wisdom, takes care to prevent all these causes of excitement in those animals which have to live a long time on their internal substance; she changes a hot-blooded animal almost into a cold-blooded one; she causes it, through instinct, to seek a retreat sheltered from too great a variation of temperature; she slackens the respiration, the circulation, and the exhalations of every kind; she plunges it into a state of torpor, and paralyses all its movements. By these means she weakens all the external and internal excitations, and keeps alive a small mammiferous animal during the whole of the winter with what it would have consumed easily in a month had it been in activity and fully awake. I have much studied the hedgehog, more particularly to compare the loss during the period of activity with that of torpor; *à priori*, if the hedgehog has not acquired fat before entering into a torpid state, he cannot pass the winter. I caused two of these animals to lose their

fat, and though they became torpid afterwards, they died in a month; the small quantity of combustible material they had preserved could not maintain them for a longer period. But the hedgehog who has the panniculus carnosus fat and thick, and the omentum well furished with adipose matter, is capable of existing from November to March without taking any food. On awaking he has still something left, for he must be provided against the cold days which might be unseasonably prolonged. A hedgehog weighing 1035 grammes lost per diem 8 gr. 6: that is, 8 gr. 6 per kilogramme of live weight at the end of seven weeks, during which he still ate a little, and was reduced to 965 kilogrammes; he then became torpid, and awoke at the end of four months or thereabout. In the state of torpor in 112 days he lost 230 grammes, or nearly one fourth of his whole weight, or 2 gr. 5 per twenty-four hours. During and in consequence of the torpor, the daily loss was thus reduced just to one fourth of what it was during the period of activity; this is a considerable average. If the animal had consumed the same quantity in a state of torpor as when in activity, it would have consumed in one month that which was to suffice for four, consequently before the end of the month of December it would have exhausted that which was to nourish and warm it to the end of March. What takes place in the hedgehog takes place likewise in all other hybernating animals, and something analogous is the case with reptiles and the invertebrata, of which I may be allowed to quote an example. Every one knows that the hedge and vine snail at the approach of the cold weather hides in damp excavations, and retires to the bottom of the shell, the entrance of which it hermetically closes. It is thereby protected from the direct action of the air, and only respires and perspires through the pores of its calcareous envelope. Fifty snails thus closed up, well wiped dry and clean, weighed 904 grammes. From the 12th of November to the 1st of March they lost 42 grammes in 109 days, being 0 gr. 38 in every twenty-four hours. In the spring, when they had cast off their opercular films, they lost 1 gr. 15 in every twenty-four hours, that is, three times as much as during the torpid state. It is, then, from motives of economy as to nutriment and combustible matter, that the snail shuts itself in so closely in winter. By thus shutting itself up it can subsist for three months on what it would otherwise have consumed in one. I was struck by the simplicity and the uniformity of the phenomena by which life is maintained during hybernation, without food, in all animals, from the mammifera to those which inhabit a thin shell. It appears

to me that, fundamentally, all things are the same, with but very slight variations. I likewise find between the calm and quiet horse, which consumed only 2½ kilogrammes of its substance per diem, and the one labouring under fever burning from 15 to 16, the same difference as between the torpid hedgehog and the one that is fully awake, and between the snail shut up in its shell and the one with the shell wide open. How many more analogies between these phenomena and many others would we find if we were to search for them. Between the man asleep and the man awake the same contrast exists as between the hybernator asleep and the one awake. I have often weighed myself before going to sleep and again at awakening, so as to ascertain and compare the loss during sleep and being awake. Thus, while I lost during sleep 28, 30, to 35 grammes per hour, the losses were while awake 50, 60, to 80 grammes, and they rose from 100 to 130 if I was occupied in dissections or operations, and, finally, reached to 200 grammes under the influence of only a somewhat brisk walk. Sleep, therefore, is a great restorer under the double title, that is, in itself and by lessening in a considerable degree the losses of the system. The sick patient who does not sleep is soon reduced in strength. The unfortunate man who suffers from hunger and cold derives great benefit from sleep. In this, like in many other things, observation has gone before scientific demonstration. Notice, also, that which takes place with animals put to fatten: the goose, in its narrow, dark cage, soon acquires the fatty liver; the ox would with difficulty lay on fat if kept in an airy, well-lighted box, in which he had perfect freedom of motion, and were tormented by insects. We must, therefore, close the door and the windows, moderate the temperature so as to induce sleepiness and torpor, and also remove all causes of exeitement capable of inereasing the losses of the organism.—*Bulletin de la Société Impériale de Médecine Vétérinaire de Paris.*

Veterinary Jurisprudence.

TAUNTON COUNTY COURT.—August 4th.

Before C. Saunders, Esq., Judge.

DISTINCT WARRANTY—CLEAR BREACH—INCREDIBLE DEFENCE.

Edwards *v.* Gibbs.

For the plaintiff, Mr. F. Trenchard; for the defence, Mr. H. Trenchard. The plaintiff is a farmer, at Cothelstone, the defendant being a veterinary surgeon at Taunton. The action was brought to recover £7 13*s.* 4*d.*, damages, consequent on the breach of warranty of a horse.

The plaintiff stated that on the first Saturday in May the defendant told him he knew where there was a horse that would suit him—at Mr. Risdon's, Escott Farm, Stogumber, which had been used by him on the farm, drawing turnips, and going to the station in a light cart and for riding purposes—that he should go down next week, and buy the horse. Plaintiff told him not to buy the horse on his account, but he wanted a horse to ride and drive, and one that would be warranted sound. On the 13th or 14th of May the defendant came to his house, told him he had bought the horse, and would send it up for him to look at—that it was perfectly steady to ride or drive, and perfectly sound, and that he would warrant it to be so. He said he had given £17 for it, and had a written warranty with it. He also said, "Tom, you'll not buy a horse of a trip-trap fellow—the horse is everything I have said it is—sound and steady." He added that the horse cost him £17, and he wanted £1 for buying it. Plaintiff told him that if the horse was all he said it was, he would give him the pound. The next day, or the day after, the defendant sent his son with the horse. The horse was driven four or five miles; he was much pleased with it, and paid £18 for it. Seven or eight days afterwards he saw the horse had rubbed his tail and mane a good deal, and the defendant said it was all right—the horse was as he had warranted it, and he would send a pot of ointment to rub into the mane. He did not send it, and, on the Saturday week, the rubbing getting worse, he sent for the ointment, which was directed to be rubbed in twice a day. He followed the directions, but the horse got worse, and when turned out was like a mad thing, and lost almost all the mane and tail. The neck and shoulders were in a very bad state, and the animal was unfit for work. He told the defendant the state the horse was in, and that he should sell it in the market. His reply was that it was all nonsense, and the horse would come all right again. He showed the horse to a veterinary surgeon, then it was taken to the defendant, and the plaintiff demanded the money he had paid, as the horse had the sweet itch, and it was an unsoundness. The defendant refused to pay the money back, and he then told him he should sell the horse in the market, and sue him for the difference. The defendant refused to pay the money back at once. The horse was sold by Mr. Daniel for £12 10*s.*

Cross-examined.—He and the defendant had always been good friends. He found out by the collar that corruption was issuing from the horse's neck. When he brought back the horse the defendant denied that he had given any warranty, in fact he always denied that he had warranted it. When he paid the money for the horse he told the defendant he was afraid it had the sweet itch, and then he promised to send a bottle of liniment for it. The defendant replied that it was all nonsense, and the horse was everything he said about it. Mrs. Edwards and the defendant's brother, were present when the defendant gave the warranty.

Mrs. Edwards confirmed her husband's testimony as to the warranty.

Mr. Risdon, of Stogumber, bartered the horse in question to the defendant. Last year the horse had a humour about the mane and tail, but in the autumn it was right again. The defendant at that time saw the horse, and said he thought he could cure it or do it good, and the defendant's man dressed it two or three times. It seemed to do it a little good, but it broke out again afterwards. The disease generally came on in May or June, continued for six weeks, and the hair came again in the winter. The disease did not prevent the horse from working. The defendant gave him £16 5*s.* worth of manure for the horse. He did not warrant it at all.

Mr. Charles William Gregory, veterinary surgeon at Taunton, examined

the horse, and found it had disease of the skin commonly known as the sweet itch, a disease which was constitutional. There was no radical cure for it, but it might be temporarily allayed: It was, however, decided unsoundness. He charged half-a-guinea for the examination.

Mr. H. Trenchard said it was somewhat remarkable that the defendant, a veterinary surgeon himself, knowing that the animal had got the disease, should have given such a price for it. Besides, they were, he believed, relations. A still more remarkable feature was that defendant would positively deny that he had given a warranty.

The defendant stated that the first deal took place at his house. The plaintiff dined at his house. He had the horse upon trial, and did not warrant it, nor was it his custom to do so, as a horse might be sound to-day and unsound to-morrow. He did not warrant the horse at the plaintiff's house, neither did he tell him he had bought it. He swore, most solemnly, that he never warranted the horse, if he was never to speak more. He told the plaintiff that if the horse had the sweet itch it was no fault of his, because he bought the horse for his own use. He never told the plaintiff that he had received a written warranty with the horse from Mr. Risdon.

The defendant's son confirmed his father's testimony as to no warranty being given with the horse.

Mr. F. Trenchard.—You don't call upon me to reply ?

His Honour.—Certainly not. A distinct warranty, and a clear breach. The statement of the defendant is perfectly incredible.—Verdict for the plaintiff.

CRUELTY TO ANIMALS.

George Greenwood, a drover, was charged on remand with cruelly ill-treating and torturing a sheep, and causing its death in the Metropolitan Cattle Market.

It appeared that a sheep broke away from a flock, and the prisoner, who was coming towards it, was called on to stop the animal. He, at the time, had a large stick with a goad in it. He struck the sheep, and then, ran the stick into the poor thing with such force that it passed through the skin and flesh on one side, through the entrails, and out on the other side. The stick, in passing through the animal, destroyed the kidneys, and one of the slaughtermen at the market said it was the most horrible sight he had ever seen. The sheep belonged to Mr. J. Thorpe, a cattle salesman, who, having heard of the circumstance, gave the prisoner into custody.

Several salesmen, who were in attendance to hear the case, said they were determined to put down the cruelty at the Cattle Market, as it was a crying evil, and a disgrace to the metropolis. Although they were prepared to render every assistance, yet their efforts were rendered useless by the way in which the Market's Improvements Committee granted licences to every one that applied. If a drover were convicted of cruelty or any offence, he could still work in the market. What they wanted was, that when a man had been covicted, his badge should be withdrawn, and he should not be allowed any more to work in the market. The salesmen also request that more police should be employed in and about the market, as that body is the only real and effectual check against the cruelty that is practised there.

The Magistrate remanded the prisoner, as the principal witness—a boy, did not know the nature of an oath.

HAMMERSMITH.

BARBAROUS CRUELTY TO A COW.

William Moss was charged with having gouged out the eye of a cow. The case had been adjourned for the attendance of a veterinary surgeon.

The prisoner, while trying to drive a cow through some water, had beaten the animal with a stick over the head, and had pulled out its eye with his finger and thumb, and then placed it back again.

The Veterinary Surgeon thought that the eye had not been gouged out, but it had been seriously injured, and the animal would not see again with it.

Mr. Dayman ordered the prisoner to be imprisoned for one month, with hard labour.

SHOCKING BRUTALITY.

Thomas Endicott, a dealer in dead horses, was charged with brutally ill-treating a horse.

Mr. Willesford appeared for the Society for the Prevention of Cruelty to Animals.

Mr. H. S. Mallett stated, that on the day in question he was on Southernhay, and saw the defendant and another man dragging along a horse, which only had two legs that it could walk on. The left fore leg was very much swollen, and had on it a large wound, which had been powdered to conceal it. The other leg was also much swollen. Defendant was whipping the horse, and another man was dragging it along. The men managed to get the horse as far as the fly-stand in Magdalen Street, where the horse stopped, and they could not get it to go any further. The men then got a chain and put it around the horse's hind quarters, and dragged it into the 'Valiant Soldier' inn stables. Defendant then took a pocket-knife, and dug it into the horse's breast six or seven times, and then tore the flesh abroad with his hand. The horse suffered for fifteen minutes, and then died. He considered that defendant was intoxicated.

The Rev. Henry Wright corroborated last witness's statement.

Defendant said he was very sorry for what he had done, and owned that he had acted cruelly.

The Bench said they considered this a most disgraceful case, and that they should not be doing their duty were they not to punish the prisoner severely. The sentence of the Court on him would be to be imprisoned, with hard labour, for three months.—*Exeter Police Court.*

OBITUARY.

Among the officers whose deaths are officially reported at the War Office since the 1st of August we perceive the name of M. Poett, M.R.C.V.S., Army Staff Corps. His diploma bears date December 4th, 1832, London.

THE

VETERINARIAN.

VOL. XXXVI. No. 431. NOVEMBER, 1863. Fourth Series. No. 107.

Communications and Cases.

INTRODUCTORY LECTURE DELIVERED AT THE OPENING OF THE SESSION 1863–64, AT THE ROYAL VETERINARY COLLEGE.

By Professor Tuson.

Gentlemen,—As to the majority of persons, so to me, the return home of old friends after a long absence is invariably productive of very great pleasure. Perhaps, then, I may be permitted to commence this, the lecture introductory to the session 1863-64, by expressing the gratification I experience in once more standing behind this table, and in seeing around me so many faces with which I am familiar. Let me trust that the long, too long vacation, which the possessors of these same familiar faces have been spending has not been entirely devoted to frivolous amusement, but that a considerable portion of it, at least, has been consumed in the acquirement of a more perfect knowledge of the principles and practice of that pursuit which I sincerely hope they will each and all of them, in the course of a few short months, be legally entitled to follow as a profession.

And now, gentlemen of the first year—you who this day commence your career as students of this College, and to whom my remarks this morning will be more especially addressed—permit me, on behalf of my colleagues and myself, to offer you a hearty welcome.

There are, I believe, few, if any, periods of a man's life more critical or more important than when he is about to choose a pursuit the following of which is to be the means

of obtaining the social position of his ambition, and of acquiring the necessaries of life for the support of himself, and probably also of others dependent upon him. It is therefore to be hoped that you, gentlemen, have weighed seriously and well all the evidence you could collect for and against the profession you have chosen before you resolved upon enlisting yourselves into its ranks; and rest assured that success, even in a moderate degree, will not be yours unless you are prepared for hard and steady work, likewise to combat with and overcome many difficulties and disappointments from which no calling is free, and which must be experienced to be appreciated.

Presuming that you have given the choice of a profession the serious consideration it demands, I may now observe that, although my direct experience of the veterinary art and its practitioners only extends over a period of three years, still I have already seen quite enough of both to enable me to congratulate you on your selection.

I congratulate you for many reasons; chiefly, however, because I feel that veterinary or comparative medicine, if rightly and intelligently pursued, is excelled by few other occupations in interest and variety; because many of its teachings often may be, and in fact are, of actual practical service to the higher calling of human medicine, and therefore to suffering mankind; and because it will be your mission—I may say your noble mission—to spend your lives in endeavouring to alleviate the bodily sufferings of a class of living beings which, if not in possession of the loftier attributes of man, neverthless demand our kind and considerate care and attention, from their occupying a position but slightly inferior to him in utility and importance among the myriads of creatures with which Nature has populated our planet. Doubtless, then, it will be a matter of considerable satisfaction to you to know that, among other advantages in the performance of your professional duties, you will be enabled to foster one of man's noblest and best qualities—a humane disposition.

That the pursuit of veterinary medicine possesses this great advantage I am convinced; and I am pleased to have this opportunity of testifying to the kind, indeed affectionate manner, in which the veterinary surgeons with whom I have had the pleasure of becoming acquainted treat the animals committed to their charge; in fact, no human being could receive greater attention than is bestowed by these gentlemen upon their poor dumb patients. Furthermore, it seems to me you do well in adopting a young and rising profession

like that of veterinary medicine, in consequence of its offering greater opportunities than many other occupations, of distinguishing yourselves by your labours; for although much has already been accomplished by your predecessors, there is an abundance of good work yet to be done, in a variety of ways, towards enabling the veterinarian and his art to occupy a more exalted status in the estimation of the public than they now do.

I am not a veterinary surgeon myself, nevertheless I shall now venture to point out to you a few of the broader paths which I consider it will be best for you to take in order that you may hereafter acquire a sound knowledge of your profession; how you may be the means of increasing its utility and importance; and how you yourselves may raise its dignity.

Firstly, gentlemen, your parents, your guardians, or yourselves, should take care that, before you commence your purely professional studies, your general or scholastic education is equal, aye even superior, to that acquired by the majority of youths of the present day. I know, by experience gained in this College and in several schools of human medicine, that the study of anatomy and physiology, for instance, as well as that of other medical subjects, is incomparably easier to the pupil who has a knowledge of the classics than to him who is deficient in this respect. Then again, unless the student is a good arithmetician, it is utterly impossible for him to master and apply the beautiful and immutable laws of nature which a profitable study of chemistry tells him governs the varied changes in composition which all materials in this world are capable of undergoing. Independent, however, of the benefit arising from the possession of a good scholastic education, in enabling the possessor to gain a knowledge of his professional subjects with greater facility, the student, by his previous training, has learnt *how* to study before he comes to college. He does not simply know how to read in its most literal sense, but he can also "mark, learn, and inwardly digest," and, finally, readily assimilate the mental food with which he has been dealing. We all know that the members of the medical and legal professions at the present time hold, as a rule, a high position in the social scale. Now, to my mind, this tenure of superiority of station is not to be attributed so much to the nature of the duties performed by the doctor or the lawyer as to the circumstance of its being universally understood that they are men of education and refinement. These qualities are the talismen which admit them into all grades of society;

nay more, which in a great measure make them the courted companions and confidential advisers of all classes of persons, from the monarch to the beggar. Formerly, the barber or the herbalist was called upon to cure the ills that human flesh is heir to, just as at no very distant period the farrier or the cow-leech were the only persons to whom one could entrust the medical treatment of the lower animals. When we reflect that we may date the rise of the parent profession of human medicine from the time its practice began to be carried on by men who had already received a superior preliminary education—that its origin was as ignoble as, and its objects, although higher, still similar to, those of veterinary medicine—it certainly appears to me fair to predict that veterinary surgery will take much higher rank than it now does so soon as it is known that it is adopted as a profession by men of liberal education *only*.

Of late years, persons desirous of obtaining commissions in the army, as combatant officers, have been compelled to pass an examination in the elements of those subjects of general education with which every gentleman is supposed to be acquainted. Now you, gentlemen, so soon as you shall have obtained the diploma of the London Board of Examiners, will be entitled to compete for and hold commissions as veterinary surgeons in Her Majesty's cavalry. Certainly, then, those of you whose ambition lies in this direction should consider it a duty to the officers with whom you will associate, to the service you will join, and to the profession to which you will belong, to be as well educated as the mass of the other officers in the army are.

It may not be thought, I hope, quite out of place here to mention, that in an American paper called 'Wilkes' Spirit of the Times,' it is stated that "both Federal and State authorities have awoke to the stringent necessity of appointing a thoroughly educated and competent veterinary surgeon to each cavalry regiment. * * * * Had this plan been adopted at the commencement of the war, the lives of thousands of valuable animals would have been saved, and hundreds of thousands of dollars spared." In the paragraph concluding the article from which I have just quoted, reference is made to "the appointment of Mr. Thomas K. Quickfall, as veterinary surgeon of the Second New Jersey Cavalry." This gentleman was a pupil of this College, and is a member of the Royal College of Veterinary Surgeons.

Such an acknowledgment, by a country like America, of the value of the London diploma, and of the services which

the holders thereof are capable of rendering, must be highly gratifying to all here, and will, I have no doubt, induce you to make every exertion to render your profession even still more worthy of the compliment which has been paid to it.

By all means, then, let me most strongly advise you not to neglect your general education. If there be any among you whose scholastic knowledge is not so extensive as you could wish, why, do that which many of the best and cleverest men which the world has ever seen have done before you, and what many young men and youths occupying situations during the day are now doing—I mean, educate yourselves. I do not hesitate to make this suggestion to you, gentlemen, because experience tells me that if veterinary students can see their way clearly to acquire information and knowledge of any kind that will be of service to them in their profession or in after life, they will cheerfully sacrifice the necessary time, labour, and money.

Having insisted upon the necessity of your obtaining a sound scholastic education, I shall now proceed to advocate the advisability of your going through a course of preliminary scientific study. That is to say, I consider that after you have left school, and before you attempt to pay any attention to strictly medical and surgical studies, it is desirable that you should gain a general acquaintance with the natural and experimental sciences, *e. g.*, Zoology, Botany, Natural Philosophy, and Chemistry. The more immediate advantage derivable from the adoption of such a course would be, that when you come to apply yourselves to the study of your purely professional subjects, your preliminary knowledge would constitute a solid foundation upon which your superstructure of rational and medical knowledge could and would be easily and securely erected. You would also be considerable gainers in other ways. For example: the student of the natural and experimental sciences is continually called upon to exercise his powers of observation and generalisation, and to note phenomena which may result from the workings of the laws of nature or from those occasioned by experiment. In either case his reasoning faculties are excited, and in endeavouring to translate the phenomena which he has observed (*i. e.*, to arrive at a correct explanation of their meaning), his mind acquires that strength and vigour which is engendered by the study of the more abstract sciences, such as the mathematics, metaphysics, and the like. The truth of these observations is corroborated by the fact that at the present time a knowledge of the natural and experimental sciences is strongly recommended, if not rendered

imperative, to persons qualifying themselves for all the more important callings which men of liberal education follow. Why, even our old universities of Oxford and Cambridge have of late years acknowledged the importance of these subjects. Lest I should be misunderstood, I would beg to state that I do not for a moment mean you to infer from my remarks that I consider it necessary you should endeavour to obtain a *profound* knowledge of the preliminary scientific subjects I have named, or that you are ever to neglect opportunities of gaining a *practical experience* of your profession, in order that you may become learned in the scientific or theoretic foundation upon which it is based; but I do mean to say that the veterinary surgeon who has received the general and scientific education I consider he ought to receive, will have the opportunity of gaining a more thorough knowledge of his art, will exercise his calling with much greater skill, confidence, and success, and will be much more likely to contribute to the advancement of his profession, than he who possesses it not. You must know, gentlemen, that I look forward with considerable hope to the day when the existence of a great anomaly in which you are concerned will cease—I mean when the schools of human medicine will no longer enjoy the enviable honour of being the sole nurseries, as one may call them, of our Owens, our Grays, our Grants, our Queketts, our Marshall Halls, our Brown-Séquards, our Huxleys, and other illustrious working naturalists, comparative anatomists, and physiologists. Why should not our schools of comparative medicine send forth such men?

Speaking of science in relation to veterinary medicine, naturally induces me to expatiate upon the advantages which you are to derive from the study of that branch of it which, in conjunction with materia medica, I have the pleasure of teaching in this institution. Gentlemen, I refer to chemistry, of which the great Sir Humphrey Davy has truly said, "its beginning is pleasure, its progress knowledge, and its objects truth and utility." Most, if not all, of my audience are probably aware that chemistry is the offspring of alchemy—a pursuit which is generally considered to have originated centuries ago with the Arabians—a pursuit, also, which had for its main object the discovery of the philosopher's stone. This material was to enable its owner to acquire unlimited wealth, by turning the baser, or common metals, into gold. The alchemist likewise aimed at the discovery of the *elixir vitæ*—a preparation supposed to have the priceless quality of conferring on those who partook of it the power of prolonging their lives to any extent, and of enjoying all the pleasures

and of exhibiting all the freshness of youth. Now, however much we may feel inclined to ridicule the notions and objects of the alchemists, we cannot, at the same time, fail to admire them for the indefatigable energy and perseverance which they brought to bear on their undertakings—qualities which it would be well for us of the present age to emulate. The labours of the followers of alchemy were not attended by such futile results as one might at first sight imagine. It is true they utterly failed, in spite of numerous assertions to the contrary, in accomplishing their principal object, but we must not forget that they discovered many substances which to this hour are, and probably ever will be, invaluable, in consequence of their utility. Thus, among other bodies, the alchemists discovered a number of acids; these they caused to act on metallic and other substances, and so produced various compounds which became, and still are, valuable as medicines.

You will, perhaps, better comprehend the truth of this assertion when I inform you that we are indebted to the alchemists for the common mineral acids, calomel, corrosive sublimate, some of the preparations of antimony, as well as a host of other important remedial agents. Although the alchemists discovered a great many substances and facts, the advances which they made were fitful and slow, in consequence of their being unacquainted with the laws regulating the phenomena they observed.

It was only after Priestly and Scheele, nearly a century ago, had discovered oxygen, that Lavoisier and certain other French chemists, as well as our own countryman, Dalton, laid the foundation of modern or scientific chemistry, by investigating and establishing the beautiful laws which we now know governs the combination and decomposition of all the materials out of which Nature has constructed her three kingdoms. So long as the older chemists had no fixed principles to guide them in their practice, their labours were followed by irregular and uncertain results, and the progress which they made was extremely tardy; but so soon as the "laws of combination" were established, chemical discoveries began to accumulate rapidly, and many of these discoveries have received such important, various, and general applications, that chemistry stands unrivalled among the departments of human knowledge, as an example of the immense stimulus which may be given to an art by knowing and applying the principles governing its practice; in short, as an example of the wisdom of not relying upon empiricism alone, but of bringing to bear on a calling a judicious admix-

ture of theory and practice together. I think I may say, without fear of contradiction, that there are very few pursuits but what have been benefited, more or less, by chemistry; and just to give you an instance of the valuable services which she has rendered to man by administering to his every-day requirements, I will relate a few facts taken from the history of the gas called chlorine. For ages the vegetable fibres flax and cotton have been woven into linen and calico—two materials of clothing sought after by rich and poor, and which, when they leave the looms, have a brown colour. In order to remove this objectionable brown colour, it was customary until, I believe, about eighty years ago, for spinners in this country to ship their raw linen and calico to Holland, where these fabrics were spread out on extensive lawns, so that they might be subjected to the bleeching action exerted by the combined influences of sun, air, and moisture. This Dutch mode of bleaching required weeks, and, if the weather proved unfavorable, months, for its completion, and *then* the goods had to be returned to England. We thus see that, while dependent on the Dutch, the operation of bleaching was one involving the consumption of much time, the risk of loss by shipwreck, and the sinking of a great amount of capital. In the year 1784, Scheele discovered chlorine, and noticed that, whether in the state of gas or dissolved in water, it enjoyed the property of depriving many vegetable substances of their colour in a few minutes or, at most, in a few hours. It was, however, reserved for Berthollet, an eminent French chemist, to successfully apply this fact to the bleaching of textile fabrics on the large scale. The consequence of its application was, that the spinner could invest less capital, a new branch of trade sprang up which gave employment to thousands of persons, and the public generally were supplied with two of the most useful articles of clothing at a much cheaper price than hitherto.

The manufacture of coal-gas affords us another and less hackneyed illustration of the beneficial influence of chemistry on the progress of the useful arts. When coal was first employed as a source of illuminating-gas, and for many years afterwards, the tar, and the watery fluid produced along with the gas itself, were looked upon as worthless. Within a comparatively short period the chemist, by his investigations, originally conducted in the cause of pure science only, discovered a mine of wealth in the waste or by-products already named. That is to say, from the once worthless gas-water, agriculture and medicine are now supplied with the various compounds of ammonia which they require. By dis-

tilling the tar we obtain a residuum of pitch, a material of many well-known uses, and an inflammable liquid commonly called coal-tar naphtha. This coal-tar naphtha, submitted to repeated fractional distillations, yields very many valuable products. Thus, we get liquids capable of being burned in lamps, and thereby used as sources of heat and light. We also obtain the remarkable fluid called benzol, a material extensively employed in the manufacture of varnishes, and as a detergent, so to speak, to grease-stained fabrics. By acting on benzol with nitric acid, it is converted into artificial oil of bitter almonds, and used as a cheap substitute for the true oil by the perfumer and confectioner, for the purposes of communicating odour and flavour. When artificial oil of bitter almonds has passed through particular series of operations, it is transformed into those beautiful colouring matters, or dyes, mauve and magenta, the manufacture of which has employed thousands of persons, and actually made the fortunes, and great ones too, of many others. Besides benzol, from tar we obtain carbolic acid—an antiseptic and caustic which, in the hands of some practitioners, has, it is said, rendered good service to the veterinary art. These are only a few examples, selected at random, of the materials of practical utility which have been drawn from the well of science by the labours of the chemist.

If we were to turn to agriculture, an art intimately connected with your own, we should find that she is much indebted to the chemist for the assistance he has furnished, not only in reference to the composition of crops, soils, manures, &c., but likewise in pointing out to the farmer the most profitable and best way of feeding and fattening his cattle; also in preventing him from being cheated in the purchase of manures, the various oil-cakes, and in many other ways that I cannot allude to here. One might cite thousands of applications of chemical science similar to the last two, but it will, I am sure, gentlemen, be more interesting to you if I now briefly refer to the aid which the same science has given, and continues to render, to many of the different departments of medical knowledge with which you will be expected to acquaint yourselves.

The information revealed to you by anatomy, which teaches you the shape, structure, and relative positions of the organs of an animal, would be incomplete without you also knew of what they were each chemically composed.

It is, however, to physiology—that most interesting study which makes us acquainted with the *duties performed* by the various organs while in a state of health—that chemistry has rendered especial service. Without the assistance of this

science the physiologist would have ever possessed but little actual knowledge of the processes of digestion, assimilation, respiration, &c.; and it is chemistry alone that informs us of the composition of, and of the changes in composition undergone in the body by, the different kinds of food, of the saliva, gastric juice, bile, blood, urine, and so forth. In confirmation of these statements respecting the influence of chemical knowledge on physiological pursuits, I can do no better than quote some of the remarks contained in the very admirable 'Address in Physiology' delivered last year at the annual meeting of the British Medical Association, by the learned professor of physiology at University College, London. Dr. Sharpey, one of your examiners, gentlemen, and to whom I refer, said, in speaking of physiological chemistry, "I need scarcely remark that the spirit of research in that department has been so busy, and the results obtained so vast and so varied, that, compared with its importance, my reference to the subject must be slight and partial. I may remind you, in the first place, of the knowledge gained concerning the proximate principles of food; the recognition in plants of albumenoid compounds, in virtue of which vegetable nourishment sustains animal life; the light thrown on the changes which nutrient matters undergo in the alimentary canal, fitting them for absorption and reception into the blood, and on the operation of the salivary, gastric, and pancreatic fluids in producing these changes, as well as the discovery of the peculiar constituents of those fluids on which their efficacy depends." Reference is then made by the learned doctor to "the broad and luminous views emanating from Liebig and his school as to the use, immediate destination, and ultimate disposition of the several constituents of the aliment, in repairing the consumption of the tissues and maintaining the heat of the body; and the final identification, qualitative and quantitative, by Schmidt, Boussingault, Barrel, Bischoff, and others, of the constituent elements of the nutritive principles as discharged by the lungs, kidneys, and skin. It is now also shown that these exuvial materials, after being delivered over to the earth and atmosphere in the shape of water, carbonic acid, and ammoniacal urinary products, become available as the food of plants, by which they are again combined into proximate principles, and serve anew for the sustenance of the animal kingdom; and in this admirable cycle of interchange and reciprocal compensation between the three kingdoms of nature, we are permitted to see another example of that tendency to the maintenance of order and stability so conspicuous in the phenomena of the universe. But, although the chemist thus presents us, as it

were, with an accurate balance-sheet, showing the food taken into the system and the final products coming out, and has shown us that the supply can be identified and accounted for in the expenditure, we are still but imperfectly informed of the intermediate changes which the nutrient matters undergo in the blood and in the tissues before they are brought to their finally excreted condition. Among the actual data which afford a basis for this inquiry, and which may eventually lead to the solution of the question, I refer to the several compounds which have been obtained from muscle, and which are probably the immediate products of the metamorphosis of that tissue; but especially to the brilliant discovery by Bernard of the production in the animal economy of a substance analogous to starch. This amyloid substance, glycogen, shown by Bernard to be largely generated in the liver, and, according to subsequent experimenters, also in the muscle and other tissues, is supposed to be converted into sugar and finally oxidated; although Dr. Pavy, led by his ingenious and laborious researches, has thrown doubt on its actual conversion into sugar during life. However this may be, it is plain that in the production of glycogen we see the actual formation of a hydrocarbonous product in the animal body; and, as its production goes on when hydrocarbonous food, and, indeed, every kind of food, is withheld, it probably represents one of the transitional conditions through which hydrocarbonous matter, whether proceeding directly from the food, or derived from the metamorphosis of the albumenoid tissues, passes before final oxidation. As bearing on these larger questions, I would also refer to the advances made in the chemical examination of the tissues and fluids, especially to the blood; the experiment of Harley and Lothar Mayer showing, in opposition to Magnus, that the oxygen is not merely retained in the fluid by physical absorption, but held by chemical affinity; also the recognition of ammonia in the blood, and the well-known discovery of our distinguished associate, Dr. Richardson, of its efficacy in maintaining fluidity.

It is worthy of note that, in the course of such inquiries, particular facts are sometimes elicited which afford hints of fresh discovery and suggest important practical applications. The unlooked-for contrast between the saline constituents of the blood-plasma and corpuscles, the one containing chiefly soda and the other potash, and the predominance of potash in muscle, taken in connection with the well-known impairment of muscular strength and impoverishment of the blood in scurvy, led Dr. Garrod to suspect that the disease might

be connected with deficiency of potash in the system; and on further reflecting that the most approved anti-scorbutic remedies and aliments contain much potash, he was led to try that substance as an antidote, and, so far as experience goes, has found it a promising one.—This view of the important connection existing between chemistry and, perhaps the most important of all your studies, namely, physiology, has not been depicted, recollect, gentlemen, by a chemist, but by one who is a medical man and a physiologist of the highest standing.

Pathology and therapeutics, especially the former, have been much advanced by the borrowed light of chemical science; and the majority of physicians are now so fully cognisant of this fact, that they daily and hourly employ the test-tube as an aid to diagnosis, and to assist them in devising a rational mode of treating the diseases of the patients committed to their care.

Again, no one can properly prepare or prescribe a very great number of medicines, unless they are well acquainted with practical and theoretical chemistry.

Finally, without chemistry, toxicology would have but little importance attached to it as a branch of professional medical education; for when an animal is killed by poison, it is chemistry only that, in the majority of cases, can discover the agent which has been the cause of death. Toxicological chemistry is well deserving greater attention at your hands than many of your predecessors have devoted to it, for, in addition to the benefit derived from the practical application of our present knowledge in this direction, there is still much room for original investigation, especially among the poisons of vegetable origin.

I have devoted a much greater length of time than I originally intended to the advocacy of the claims which the theory and practice of chemistry have upon your attention, but I was induced so to do from the belief that their worth has not yet been so fully recognised by the followers of your art as they should be, and as they are by the followers of human medicine, and from the wish to awaken in you a desire to gain a sound knowledge of subjects having such important bearings upon every department of your professional studies as experience will show you they have.

Before concluding, I would beg to direct your attention to the alterations and improvements which are now being carried out within the walls of this College. The governors of the College, ever desirous of extending the usefulness of the institution, of augmenting the advantages which it offers, and of doing everything in their power to enable it not only

to maintain, but actually to elevate, its position, have directed the infirmary to be enlarged, a new dissecting-room to be built, and the construction of a commodious and well-appointed chemical laboratory, in which I hope, before the present session is over, you will be able to put in practice the principles you have gathered in the lecture-room.

Gentlemen, as you have doubtless perceived, I have not attempted any display of eloquence in this address; I have said nothing concerning the manner in which you should conduct yourselves while sojourning in this city of temptations, because I feel that advice of this nature, as well as moral precepts generally, naturally meet with a more favorable reception by you when emanating, as they probably already have emanated, from your parents, or from men much my seniors, and therefore more entitled to your attention and respect. Neither have I indicated to you the most desirable manner of prosecuting your studies, because, as I am not a veterinary surgeon, I consider such information will be best imparted to you by each professor in the lecture introductory to his own special department of science; but, gentlemen, I have endeavoured to tell you a few plain truths bearing upon your early education, both general and scientific, which if neglected will be to your disadvantage, but which, if attended to, will materially assist in promoting that in which I am, and, I hope, ever shall be, greatly interested, namely, the progress and success of the veterinary profession, its students, and practitioners.

OBSERVATIONS ON STRINGHALT.

By George Fleming, V.S. Military Train, South Camp, Aldershot.

In last month's *Veterinarian* I read with much satisfaction the comments of Professor Varnell on a communication made to an American newspaper, 'The New York Spirit,' by a Dr. Busteed, of that city, giving a brief description of seven cases of stringhalt, in which that gentleman had the opportunity of making *post-mortem* examinations of the limbs so affected.

While entirely agreeing with Professor Varnell as to the many reciprocal advantages that may be derived from the co-operation of those members of the sister science who interest themselves in all that pertains to an investigation of

the diseases to which domestic animals are subject, I nevertheless must give it as my opinion that neither the ends of science, nor yet the reputation of our medical brethren, will be anything benefited by the publications of such observers as Dr. Busteed; who seems to have made his *début* in equine pathology without first making himself acquainted with the most essential elements of that study—a knowledge of comparative anatomy and physiology—and yet boldly sets his opinion against that of Professor Spooner, Percival, Youatt, and Goodwin. His errors only make more manifest the great necessity which exists for a thorough knowledge of the healthy structure and functions of the various organs and textures composing the animal body, before attempting to examine and endeavour to account for those changes which occur in disease; and that more especially in such a malady as the one vulgarly, but expressively, termed "stringhalt," which has for many years been made the subject of close investigation by talented veterinary surgeons in the old world, who have been compelled to admit that its etiology is most obscure in very many instances, though the characteristic symptom is generally so well marked. Had the disease been caused by those morbid changes named by Dr. Busteed, I fear the honour of discoverer would not have been reserved for him, nor yet for very recent pathologists.

I regret that my opportunities of elucidating the structural changes which may give this irregular flexion to the tarsal articulation have not been so numerous as those of Dr. Busteed, for, though extending over many years, they number but three; and in these my bad fortune did not enable me to find anything by which one could jump to a conclusion, though I dare say the hocks might have furnished scope for speculation had my imagination been lively enough, and my knowledge of their anatomy less profound.

Dr. Busteed is inclined to dissent from the published opinions of English veterinarians, and believes the cause of the unsightly action to be located in the hock-joint; in fact, that the spasmodic flexure of the extremity is induced by the friction of the tibia in passing over an irritable ulcer on the astragalus. Has Dr. Busteed ever seen a horse, supposed to be suffering from articular ulceration of the hock-joint, walk or trot? If so, I am sure he could not have failed to notice a very different kind of movement in that joint to that which he would describe as the spasmodic action of stringhalt.

We do not generally find much spasmodic action in a diseased joint, except in some severe cases of acute arthritis (in which the articular cartilage may be implicated), when

the dreadful pain causes the animal to keep it in continual motion, but then only when not compelled to walk. In disease of a joint, the freedom of movement is generally in proportion to the extent or severity of the disease; the more formidable this is, the less the articulation is exposed to irritation by movement, or supporting weight.

In stringhalt the flexion is spasmodic, or highly exaggerated, offering a range of motion the reverse to that we should see were the hock articulations diseased; indeed it is the very opposite of what we regard as lameness.

Dr. Busteed must likewise have noticed that the free play of this ginglymoid joint in stringhalt is not limited to flexion only, but manifests itself also, to a certain degree, in sudden and forcible extension—not at all indicative of hock ulceration—when the foot of the affected limb comes to the ground with a highly magnified tread.

With Professor Varnell, I am ready to conclude that Dr. Busteed's irritable ulcer of the astragalus—so curiously discovered always in the same situation—is nothing more than the congenital synovial *fossette* or sulcus; but Dr. Busteed is not the first amateur in horse matters who has made this trifling mistake. What would particularly lead one to infer that the doctor has made this blunder is to be found in the description of Case 7, where he says that "the sinus of the inferior portion of the groove in the astragalus, which must not be mistaken for an ulcer, was very deep and but *thinly covered by cartilage*. This evidently shows that the doctor is not quite *au fait* in the anatomy of these sulci, else he would know that they are not covered by cartilage, and that this material terminates abruptly around their margins. Again, he says, in the same case, "the synovial tissue was *deep* and but slightly *covered with cartilage*." What does this mean? Is the structure of the synovial *tissue* different in America to what it is in Europe? and in this case, too, strange to relate, the "irritable ulcer" is found on the astragalus of a limb not affected by stringhalt, though this does not seem to militate against the doctor's theory or opinion.

The lesions of articular cartilage, in the domestic animals as in man, are known to be exceedingly obscure, their vitality feeble, and their vascularity and sensibility, as Professor Varnell observes next to, if not quite null. From their non-vascularity, articular cartilages are not liable to ulceration, though they may suffer from absorption or softening, as a sequel to disease, affecting primarily the other textures which enter into the composition of the joints, and notably that of

the bony tissue underneath, so that it must be indeed very rarely, if ever, that one can notice in stringhalt, or any disease affecting the hock-joint, a "ragged ulcer with granular edges in the trochlea of the astragalus," though Dr. Busteed declares he meets with such a lesion frequently. The encrusting cartilage of joints sometimes, however, becomes thin in old age, and even disappears to such an extent as to leave the bone underneath quite exposed, and possibly the New York doctor may have met with something of this sort, and mistaken it for ulceration.

One thing is certain, that ulceration cannot exist in any articulation of the extremities for even a brief space of time without causing changes which seriously modify locomotion, and induce symptoms and manifestations of pain which are not observable in, or at any rate are very dissimilar to those of, stringhalt. I fear, therefore, that the cause of this affection, like that of some others of obscure nervous diseases, yet remains to be revealed; for the local changes connected with the nerves supplying the muscles of the posterior extremities, and which have been assigned as the origin of stringhalt by some veterinary surgeons, are far from constant, and therefore not to be relied on. Even the case quoted by Professor Varnell, in which he found an alteration in the enveloping membrane of the nerve-fibres, only leads one to this conclusion; for, judging by analogy, we do not find that, during or after repeated attacks of sciatica in the human subject, there are any symptoms at all akin to those of stringhalt as we see it in the horse, though after death the neurilemma may be found considerably modified, or some change have taken place in the surrounding textures, by which pressure or irritation has been given to the nerves supplying the parts where the pain had existed.

I trust that, though I have added nothing to the scanty knowledge we possess of this malady, these remarks, following those given us by Professor Varnell, may aid in stimulating research, and in inducing those who have the precious opportunity of making an after-death examination of horses known to have been affected by stringhalt, to give us the result of their investigations. I also hope that the worthy doctor who has been the means of surprising us by such an unwonted announcement, and the promulgation of such a bold, if rather unreliable opinion, will, in pardoning me for these random criticisms on his discovery, afford us another and a more satisfactory report than that furnished to the "Dear Spirit" of New York.

OBSERVATIONS ON "SOUNDNESS."

By R. H. Dyer, M.R.C.V.S., Waterford.

(*Continued from p.* 531.)

Aquo-capsulitis is a disease which we, as veterinarians, are but little acquainted with, although I have no doubt, if more attention were paid to affections of the eye, we should occasionally diagnose it. The characteristic symptom of aquo-capsulitis is an exceedingly dull and turbid appearance of the aqueous humour.

The beautifully clear, pellucid fluid, which is generally perceptible in the anterior chamber in the healthy state, is visibly occupied by something resembling muddy water, so that it in some cases prevents the animal from seeing any object. These symptoms remain a few days only, when the fluid becomes clear again, as a general rule. There are, however, instances where the case is protracted, and is tedious to the practitioner; there are also cases met with where the aqueous humour is so changed that it partakes of a green tint. In this latter case the experience of the examiner will be required to be brought to bear. Not many days ago I was summoned to a distant county to examine a horse as to soundness. When the animal was being walked from the box-stall in which he was, to a three-horse stable, where I was anxious to pursue the examination of the eyes, I observed a peculiar movement of the head and feet, which led me to look particularly to the eyes. My attention having been thus suddenly attracted to the visual organs, I inquired how long the horse had been in the possession of the present owner—he was standing by at the time: he replied, "About a month." The aqueous humour had that peculiar tint, and the conjunctiva, when examined from behind, was of a *leaden* hue. This colour can be more easily seen when looking from before or behind than when the examiner stands laterally.

I said, "His eyes are diseased." He remarked he was not aware of it; that he had had two opinions prior to the purchase, and he held a certificate of soundness from one practitioner, and the other person was also of opinion the horse was sound. What amount of credit can be placed upon these statements I am at a loss to know; these kinds of cases are not unfrequent, as many persons may imagine. The

horse was not purchased. There were two gentlemen concerned in the purchase, one of whom rode him over some fences whilst the other looked on; in a subsequent conversation, on our way home, I was endeavouring to explain the manner horses with such impaired vision as in this particular instance take their leaps, when the looker-on exclaimed, "I remarked that he never jumped short, but always jumped *over the mark*, that is to say, jumped *too big*." These animals are safe jumpers if all goes well, but they are not those I would like to get into a difficulty with. I need not, I am sure, remark that such eyes are unsound.

It appears to me that such cases as these are the most important as well as the most difficult we can be called upon to examine. I am anxious to dwell a little upon this point, because I know how many mistakes are made by those whom it might be supposed were better acquainted with the pathological condition of the eye; there are so many circumstances connected with eye examinations which tend to perplex the examiner. In one case we meet with animals having a decided objection to prying, if the head is to be handled; secondly, the peculiarly obscure daylight often interferes with our researches. The day I am penning these remarks is one ill calculated for such examination; I was engaged this morning in the examination of a young animal, and found much difficulty in looking into the eyes at all.

It behoves us to make ourselves acquainted with all these things, so as to be the better able to guard against them. I remember a practitioner bringing a mare to me, to give an opinion upon the near eye. His words were, "Sometimes I fancy I can see something wrong in the eye, and at others I can see nothing; will you be good enough to examine it, and say if the eye be sound?" I was obliged to take this case into a dark stall, and by the aid of a lighted candle pursue the scrutiny. I found at the *back* of the lens there was an opacity, at which part cataract had commenced. The difficulty in this instance was the want of proper light. I believe, in many cases of what are termed amaurosis we are at a loss to know the structure diseased. I am almost inclined to the idea the membrane which secretes the aqueous humour is often at fault, and it is that which gives to the eye the peculiar colour we so often witness; but of this I would not like to speak in positive terms, not having directed my attention sufficiently to it.

Lenticular cataract is sometimes overlooked, from its extreme thinness. I have more than once or twice found horses passed as sound when opacity of the capsule has been

present. It amounts to unsoundness, of course, but it seldom interferes with the usefulness of the animal.

Opacity of the lens assumes such a variety of forms, that it will be necessary to merely state that cataract in any stage is an unsoundness.

The vitreous humour is that part of the structure of the visual organ but little understood by practitioners generally. That it is liable to disease there is sufficient evidence, from the fact of its becoming at one time liquefied and at another solidified; in either case loss of vision is the result.

It only remains that I should speak of the retina to complete the hastily thrown together remarks I have made upon the visual organ. This membrane, it will be remembered, consists of three layers—the external, or Jacob's membrane; the middle, or nervous membrane; and the internal, or vascular membrane. The first is said by its discoverer to be a serous membrane, the nervous is the expansion of the optic nerve, and the vascular the ramifications of the arteria centralis retina. When we take into account the three different structures, we need not feel much surprise at the complication of its diseases and the want of success in their treatment. In the first place, should we meet with inflammation of the serous membrane, we can readily understand the effects and results of such a structure being inflamed; secondly, when nerve-matter partakes of inflammatory action, we must all be aware of the pain the patient has to endure; and lastly, if the vascular membrane is diseased, we can imagine what devastating influences may be expected; and to sum up the whole, let us imagine all these different structures to be suffering from inflammation at the same time, to say nothing of other parts of the organ, we should not wonder at our efforts being without fruit, when, as surgeons, we are called upon to treat them. I need not, I am sure, state that any impairment of function of the retina will materially interfere with vision, and should be pronounced unsoundness.

A question often arises as to the soundness of an eye whose lid has been partially excised. These cases are always produced by injury, either from the bite of another horse or from being torn by a nail or some awkward instrument. I have had occasion to examine a good many of such cases as I have alluded to, and have in each observed that the eye is *lachrymose*. This it is which causes the purchaser to push his interrogations very close. I have never in any case heard of serious inconvenience; it is an *eye-sore* certainly, and must be considered *in the eye of the*

law as an unsoundness; and it might afford a purchaser (sorry for his bargain) a loophole out of which he can creep, should he desire it. At the same time it will, as far as my experience has gone, not in any way impair vision.

In these latter cases are frequently found a considerable quantity of mucus upon the lower lid, showing that the conjunctiva is not in health; and we often find also the eyes watery in horses which have recently been taken into the stable and fed upon dry food. A question is always put as to the probability of such eyes remaining sound: if the derangement is merely functional—produced by a too sudden change of dietary and stable management; by a little care and attention a healthy state of the eyes will soon be established.

(*To be continued.*)

BOTANY AS APPLIED TO VETERINARY SCIENCE.

By W. Watson, M.R.C.V.S., Rugby.

(*Continued from p.* 534.)

The only remaining plants possessing characters which may come under the notice of the veterinary surgeon belonging to the natural order Solanacea are the *Nicotiana tabacum* (*Virginian tobacco*), and the *Datura stramonium* (*thorn apple*). The *Atropa mandragora* (*mandrake*) belongs to this order of plants; but as it is rarely to be met with as growing in this country, reference will be made to it when describing the *Bryonia alba* (*white bryony*).

"*Nicotiana tabacum* (*Virginian tobacco*).—*Corolla* long, funnel-shaped, with the segments sharp pointed and turned downwards. *Calyx* permanent. *Stigma* capitate. *Capsule* four-valved at the apex, two to four-celled, many seeded. *Leaves* lanceolate, taper-pointed, decurrent. *Flowers* pink."—Lindley.

The tobacco plant in its dried condition is familiar to most of us. It was introduced into this country from France in the year 1570, and on a larger scale from Virginia in 1586. There are several varieties cultivated in gardens in this country, but the only one that attains anything like perfection is the *Nicotiana rustica* (Turkish tobacco), and even this is deficient in that pungency and narcotic power which distinguish the tobacco grown in hot climates. The *Nicotiana*

tabacum is an annual plant, attaining a height of from four to six feet, with large green leaves, some of which are nearly two feet long and four inches broad; flowers in July and August, having pale-pink flowers, and is the variety chiefly cultivated in America. The general physical properties of the leaves, when cut up into ordinary tobacco or ground into snuff, are more or less familiar to all, although its dangerous properties by its use as a luxury may not be so generally understood. The following is a view taken of its effects by an eminent writer:—"Beneficial as in some cases tobacco may prove in its character as a medicine, its use as a luxury in any form is as injurious as its intoxicating properties are lamentably demoralising. At its commencement it causes, like opium, intoxication and sickness; but by continued use in moderation these unpleasant symptoms subside into a sort of fascinating, dreamy state of semi-intoxication, which insidiously attacks the health, making disease and disorganization creep by silent and stealthy steps into the system, and drink up the spring of life, until its fountain is drained."

Its active properties depend upon a peculiar volatile alkaloid, named *nicotina*, which possesses the following characters:—It is an oily, volatile liquid, of a pale-amber colour, having an odour of tobacco, with an acrid, burning taste, which remains upon the tongue for some considerable time. Its sp. gr. is 1·048, it is alkaloid, and forms salts with acids, mixes readily with water, and is soluble in alcohol, ether, and the fixed oils. It constitutes from four to twelve in 1000 of tobacco, and is a very powerful poison, resembling prussic acid. "It also resembles prussic acid in the fact that it is a compound of carbon, nitrogen, and hydrogen, and it contains no oxygen ($C_{10}H_8N$)." As a medicinal agent, it acts as a sedative and antispasmodic, also emetic, laxative, and diuretic, but is rarely administered to animals except in the form of clyster; in the gaseous form, as smoke, it has proved highly beneficial in cases of severe colic, constipation of the bowels, and hernia. As an outward application, it is used to destroy the acari, in scab in sheep and mange in horses, also to destroy flees, lice, and other parasites, but should be applied with care, as serious consequences have followed its absorption.

As a poison, its effects upon the human subject have in many instances proved fatal. "Hertwig found that the pulse was lowered in number, and rendered intermittent and irregular, by doses given to horses varying from half an ounce to an ounce of the powdered leaves. An ox, after

consuming about four pounds of tobacco leaves, speedily became very restless, ground his teeth, and groaned, lay with outstretched limbs and distended rumen, passed quantities of thin fetid fæces, and died in eleven hours in convulsions. Quantities of the leaves were found in the alimentary canal, and the mucous membrane, especially of the fourth stomach, was red and corroded, particularly where in contact with the tobacco."

Datura stramonium (*thorn apple*).—"*Calyx* tubular, ventricose, with five angles, five-toothed, deciduous, leaving behind a broad orbicular base. *Corolla* funnel-shaped, the tube long, the limb with five angles, five plaits, and five points: *Stamens* five; *stigma* of two plates. *Fruit* spinous, ovate, erect. *Leaves* ovate, smooth, sinuated. *Flowers* white."—Lindley.

This plant, which has now become naturalised, was introduced into this country from America about the close of the sixteenth century, and is found growing about waste places and dunghills in many parts of this country. It grows from two to three feet high, has large leaves of a dark-green colour, and solitary, large, white, funnel-shaped flowers, which appear in July and August, and with a peculiar, somewhat fleshy, ovate capsule, covered with awl-shaped spines, containing a great number of dark-coloured, kidney-shaped seeds. All parts of the plant contain more or less active properties, but the leaves and seeds are the only parts employed as medicinal agents. These are powerfully narcotic, and many fatal cases are recorded of their effects upon the human subject. "When the first settlers arrived in Virginia, some ate the leaves of this plant, and experienced such strange and unpleasant effects therefrom, that the colonists called it the 'devil's apple,' a name by which it is still known in the American states." Its active properties depend upon an alkaloid named daturia, which, according to Dr. Taylor, forms about 1 per cent. of the dried vegetable, and possesses the following characters:—"Crystallizes in colourless, quadrangular prisms or needles; it has a bitter taste, becoming acrid, and resembling that of tobacco. It has the same elementary composition as atropia. It is highly poisonous; the eighth of a grain killed a sparrow in three hours. When dissolved and placed on the eye of an animal, it causes excessive dilatation of the pupil, which lasts for some days."

Since writing the above, I have received a communication, and also a specimen of the Alsike clover (*Trifolium hybridum*) from Mr. Wheeler, in reference to the remarks of its injurious effects upon horses, referred to in the last

number of the *Veterinarian*. He says that he has seen several more cases since he forwarded his remarks to the *Veterinarian*. The subject is one of great interest to the profession, and before making any further observations on it I should be glad to know if any other members of the profession have had a like result brought under their notice.

(*To be continued.*)

THE EFFECTS OF COTTON CAKE ON YOUNG STOCK.

By James Crowhurst, M.R.C.V.S., Canterbury.

On the 4th of June last I was requested to visit some calves, the property of a farmer residing about eight miles from this city, the messenger stating that he had lost a calf about a week previously, that one was now lying dead, and another had been attacked during the night. On inquiry, I learnt that the one which first died had been attacked on the previous Monday, when the services of a non-qualified practitioner, residing in the neighbourhood, were sought, who said that the animal had got "the fever and acid on the stomach," and I presume treated it accordingly. There were altogether seventeen or eighteen comprising the herd, their ages varying from three to six months. They had been having cotton cake mixed with some bran for about one month, and during the day had been turned out to graze in an adjoining meadow. In each instance it was the largest and best animal that was attacked, and the quantity of cake which the larger ones are supposed to have eaten *per diem* varied from three to four pounds. It is impossible, however, to form a correct estimate of the quantity, for, to use the words of the owner, "the larger ones had the run of the trough" from which they were all fed. Some of the smaller ones looked unhealthy, and all of them more or less were affected with cough.

I made a careful examination of the one last attacked. The symptoms exhibited were those of marked prostration, which I will endeavour to describe in detail. The patient was standing, breathing very quickly and short, and occasionally coughing. The head was depressed, and the pulse

remarkably quick and feeble in character; mucous membranes very pale, and those of the eye presenting a bloodless condition. The eyes themselves had a dull lustre, and slightly drooping lids. The appetite was considerably impaired. The fæces were natural, but the animal had not been seen to urinate. The attendant, however, had noticed that it, with several of the others, had been frequently licking some chalk or dirt from an embankment close by.

I proceeded to make a *post-mortem* examination of the one that died the previous night. On removing the common integument, I first noticed an unusual redness of some parts of the muscular tissue, more especially of the hind quarters. By scraping these places with the knife, the colour, however, was easily removed, leaving them blanched in appearance. On laying open the abdomen, upwards of a gallon of bloody *fluid* escaped, and on removing the intestines I noticed fluid blood escaping from the severed vessels. The serous membrane was pale in colour, not bearing the slightest evidence of inflammatory action. The kidneys were normal in appearance, as was also the liver, but the gall-bladder was distended with bile. The bladder was considerably distended, the urine being of the same colour as the fluid found in the abdomen. Its muscular coat, however, was blanched. The lungs were normal, but the heart was flabby. It contained only a very small amount of imperfectly clotted blood, which was black in colour. The larger vessels near the heart also contained fluid blood. The rumen was filled with ordinary ingesta, intermixed with which were the hard and black-looking husks of the cotton seed. Its mucous membrane peeled off in large flakes the size of one's hand; but when carefully examined by emptying the viscus of its contents, its muscular coat was found to be pale in colour. The mucous membrane of the reticulum was slightly reddened. The omasum contained but little ingesta, and its mucous membrane, like that of the rumen, would easily peel off. The abomasum exhibited nothing beyond a slight blush of redness of its mucous membrane. The large intestines were normal. They contained a yellow fluid, with the exception of the rectum, in which was a blood-coloured liquid similar to some which had been seen to escape from the anus after death.

The owner, standing by watching my proceedings, was anxious to know the result, when I told him my conviction was that the cotton cake had been the cause of death. I requested to be put in possession of specimens of the cake, that I might, with his consent, forward them to Professor Tuson for analysis. He at first consented to this, but I am sorry to say that afterwards he declined.

The treatment adopted for the relief of the animal affected consisted at first of a mild aperient, followed by antacids, carminatives, and tonics. I gave but little hope of a successful termination of the case, but nevertheless I ordered gruel to be given him during the day, with some ale. Crushed oats and green food were also prescribed as articles of diet. The treatment was apparently attended with benefit for four or five days, but the animal died during the night of the twelfth.

I was enabled to examine this second case also after death, and the result was to my mind very confirmatory of the conclusion I had come to on my former investigation. The appearances did not much differ, with the exception of the liver, which organ was twice its natural size, and of rather a lighter colour.

Prophylactics.—I need scarcely state that the cotton cake was discontinued with the remainder of the herd, and linseed cake given in small quantities, with crushed oats, over which some *Sodii Chloridum* was sprinkled. The animals were also turned into the meadow to graze during the day. I likewise gave to each calf antacids and carminatives, and followed them up by vegetable and mineral tonics, with, I may say, the happiest result. I have since made frequent inquiries, and learnt that they are now all doing well. I have given a somewhat lengthy and, perhaps, to some, a tedious description of these cases, but I have thought them full of interest to the veterinary surgeon, as well as to farmers and breeders of stock, for at all times prevention is more praiseworthy than cure.

It is right that I should add that the owner was feeding some older stock—yearlings—on cake of the same quality, and apparently with great benefit. From this circumstance it would appear that the age of animals intended to consume cotton cake must be taken into consideration, as well as the quality of the cake. The question arises how these morbid changes were brought about by the cake. Whether from any poisonous matter it contains, or from the hard, indigestible husk of the cotton seed, acting as an irritant to the mucous membranes of the alimentary track; or are the nutritive properties not capable of being assimilated by animals so young? The older animals doing well on it, would tend to disprove the assumption of its containing any poisonous material. The precise manner by which this was effected I am at a loss to account for, although I am fully convinced of the fact.

A VOICE FROM A DURHAM COAL MINE.

October 9, 1863.

GENTLEMEN,—Any one who may have perused the valuable remarks which appear from time to time in the leaders of the *Veterinarian* cannot fail to perceive the close manner in which you identify yourselves with the common interest of the veterinary community. Would that the members of the profession generally were actuated by this spirit more than they are, and I should not have been prompted to forward such a censorious epistle as the one I am writing.

That great efforts are being made by the teachers themselves there is no question, and great results, I am happy to see, are being realised; yet there are points where "our shoulders are needed to the wheel of advancement," to which I would call the attention of the profession generally.

It has always been my practice, whenever professional duties or visits of pleasure take me from home, to call upon my brother "Vets.;" and I need not enter into any description of the amount of pleasure derived in these opportunities of "STEALING" some information. I use the word "STEALING," because it somewhat explains a determination previously formed, for obtaining experience even at his cost. But I candidly affirm that, like the "*Rogues of Paris*," I suffer myself to be unconsciously fleeced in a similar manner by all who do me the favour to call with the same *honorable* intention.

To have secrets in the profession is at once a disgrace and signifies a "*plebeian character*" and tendency to "*quackery*." To be free and communicative to each other shows an elevation of mind, which is a symptom of that healthy state you so wisely dun into our ears, viz., "UNION."

But to proceed. In many of the opportunities afforded me of conversing with my fellows, I have noticed with regret the great amount of indifference which exists as to what is absolutely going on in the veterinary world; and to my constant query—"Do you take a copy of the *Veterinarian* or the *Veterinary Review?*" I have been astonished at the frequency of the instances where a negative reply is given. It is not long since, in pursuing the investigation a little closer, I asked "Why?" urging the lamentable fact that "not to know what was actually going in the professional community—not to be watching, as it were, the progress of the science, and its tributaries—was like being alone, and

away from the world." Great complaints were at once made as to the nature of the publications, and the quality of the matter contained therein. I confess I have felt startled in many instances at the miserable pleas and deplorable ignorance displayed by some of my brothers upon this point; and having recently endeavoured to obtain a victory over a tough gentleman of this kind, whilst revolving in my mind the urgent necessity for a second attack with greater reinforcements, I also concluded to write you a fulminatory letter against two classes of our brothers, and defend you, in your ardent desire to afford the profession all the information possible, from the maledictions of those either *incapable* or who *with propriety should not* form an opinion about the matter.

Many of these dissatisfied gentlemen I can assert with truth are men of good practical abilities; some are eloquent in conversation, others are not; some are critics (I might have said all) and are able to write articles for the "*local newspaper*" about "An alarming accident," "A runaway horse," "A vicious animal at large," and a score of other paragraphs, when a never-failing announcement terminates and garnishes the whole, and informs the "attentive and courteous reader" that "the animal, which was frightfully injured, immediately received the attentions of Mr. So-and-so, veterinary surgeon, of well-known celebrity," or "was led to that gentleman's infirmary in such a street, where at the present time [the paper a weekly, and published three or four days after the accident] the animal is progressing very favorably."

At another time he presumes to address the unsympathising and senseless public upon some uninteresting subject about "Miasma," and the treatment of such diseases as are not understood. In all these cases, where members will urge upon the public an account of their doings and luck, it would be well to warn them to desist; and if there are peculiar features which mark the case and render it worthy of publication, by all means let us, the "*rightful owners*," have the whole of the matter simply and truthfully compiled in the columns of our recognised journals. We are *the* judges, the public is not, and the "*local newspaper*" an "*unprofessional medium.*" It savours of "*blowing one's own trumpet*," or "*throwing a sprat to catch a herring.*"

To those gentlemen who never read or write for the *Veterinarian*, I would say, "*Do both.*" It is your fault—partially with the newspaper liner—if the columns of our journals are as you describe. Much valuable information is lost by your diffidence; you are able, only you know it not, to give us many practical hints, which, if not clothed in such a style

of expression as you would like, is nevertheless no more unwelcome. To neither read of the doings or opinions of others, or write to allow of others to judge of yours, is to bottle up your ideas with a malignant spirit, by which the judgment can never be so far matured as to decide whether the columns of either the *Veterinarian* or *Edinburgh Veterinary Review* are so confidently believed. There is a great responsibility, which every member of the profession should feel he takes a part in; and unless he takes his share of the great work, the superstructure can never be raised; it is but a trifle, but many trifles make the whole in which each holds a brilliant position. "It is related of a Manchester manufacturer, that in retiring from business he purchased a large estate from a noble lord, and it was part of the agreement that he was to take the house, with all its furniture, precisely as it stood. On taking possession, however, he found that a cabinet, which was in the inventory, had been removed, and on applying to the former owner about it, the latter said, '*Well, I did certainly order it to be removed; but I thought you would not have cared for so trifling a matter in so large a purchase.*' 'My lord,' was the characteristic reply, 'if I had not all my life attended to trifles, I should not have been able to purchase this estate; and, excuse me for saying so, perhaps if your lordship *had cared more about trifles,* you might *not* have had occasion *to sell it.*'"—Smiles' 'Self Help.'

Again. Are you afraid your writing will be criticised? Never fear, you are upon the right road, and benefiting others. Can you not write without "*making*" your case? Then do not write. To all I say, if you do write, let us have the plain facts, and never mind being compelled to own an error committed by you in the estimate or treatment of a case. Your failure will teach you better in future, from which *we outsiders,* in reading your plain statement, will also derive information and warning.

It may be said of me—Why has "Mentor" troubled the editors with his hot-tempered epistle about persons who neither read nor write in the veterinary journals, and who are not likely to know his sentiments towards them? My reply is, there are those who need the American's advice, viz., "Purchase your own paper; do not borrow that of your neighbour, or sift him for the news it contains." The man who has lately done so now sees the value of the information contained therein, which he formerly spurned.

A word about the "*Alsike clover.*"

I have received by this day's post a letter from a respected friend and fellow-student, now in Scotland, who expressed his

surprise at the announcement in your issue of the present month, that this plant should be charged with being the cause of the appearance of sores about the mouth and legs of animals fed upon it. He also states that it has been extensively grown in his district for feeding purposes for years, without his ever having heard of, or noticed, such effects as ascribed to it.

My own experience of the plant goes so far that I can say near 500 animals under my care, above and below ground, have been fed upon a large admixture of it with English clover, during the summer, with none of those results; and the oldest person I have consulted, who knows the nature of the plant better than I—and I confess with regret that I need much of Mr. Watson's (Rugby) valuable botanical instruction—that, as a fodder, both green and dry, he cannot bring to mind a single instance of any derangement of the kind ever having occurred, as alluded to by Mr. Wheeler. Our hay of last year, from five farms, contained large quantities of the plant, with English clover, and that secured in the past season is similarly provided.

I certainly consider, in the absence of analysis, we cannot charge the plant with such pernicious effects, coupled with the fact of its use being so very common in various parts of England and Scotland. Some years ago, I recollect having a few cases of the description, which disappeared after the exhibition of alterative medicine. One animal with a white nose and face presented the worst appearances, and in the "*total absence of alsike clover*," I attributed the cause to be connected with the digestive organs, consequent upon a change of diet. Mr. W., however, does not state how long his patients had been placed upon the food before the disease made its appearance.

I had presumed to address you, also, upon other matters, but the length of this having grown beyond my expectation compels me to desist.

MENTOR.

To the Editors of 'The Veterinarian.'

Facts and Observations.

THE CHEMICAL QUALITIES OF MILK.—Milk has been so often analysed that it would seem no further facts could be elicited regarding this important liquid. Professor Boedecker, however, has just completed a series of experiments conducted on quite a new principle. The question he proposed to himself was whether milk obtained at any hour of the day always presented the same chemical composition or not; and he has arrived at the result that the milk of the evening is richer by 3 per cent. than that of the morning; the latter containing only 10 per cent. of solid matter, and the former 13 per cent. On the other hand, the water contained in milk diminishes by 3 per cent. in the course of the day; in the morning it contains 89 per cent. of water, and only 86 per cent. in the evening. The fatty particles increase gradually as the day wears on. In the morning they amount to 2·17 per cent.; at noon, to 2·63; and in the evening to 3·42 per cent. This circumstance, if true, would be very important in a practical point of view. Let us suppose a kilogramme of milk to yield only the sixth part of its weight of butter; then the milk of the evening may yield double that quantity. The caseous particles are also more abundant in the evening than in the morning. From 2·24 they increase to 2·70 per cent., but the quantity of albumen diminishes from 0·44 to 0·31. The serum is less abundant at midnight than at noon, being 4·19 per cent. in the former case, and 4·72 in the last.—*Galignani.*

LONGEVITY OF THE HORSE.—The *Courier de Verdun* mentions a rare instance of longevity in the equine race; M. Collas-Gattelet, member of the Council-General of the Meuse, having lost a horse at the advanced age of forty-five.

VALUE OF BOTANY.—Botany has always been regarded as an important part of the education of the future practitioner of medicine. At the present time there are between 300 and 400 species of plants, some parts of which are more or less employed by the medical practitioner as remedial agents, and the greater part of which enter into the recognised formularies of the colleges. Could it be an unim-

portant matter to become acquainted with such species, so far, at least, as to be able to recognise them, to describe their structure, to know the positions in the vegetable kingdom, and the general properties which they possessed? Would it not be lowering the medical profession beneath that of the meanest trade if the members of it were in the habit of making use of substances in their daily practice when they were at the same time ignorant of everything that was most essential in their history? If they regard only the different plants which they found wild in this country, a knowledge of botany ought by no means to be despised; for it should be remembered that many important articles of the materia medica are obtained from them. But such knowledge would become of vastly more importance to them if hereafter called upon to pursue their profession abroad, more especially so if the country in which they might be located should be almost or entirely unexplored.

Poisonous Mushrooms.—M. Gérard has, by experiments on himself and others, proved that poisonous fungi may be rendered innocuous by the following process. To every pound of mushrooms, cut into moderately small pieces, add two pints of water, acidulated with an ounce or an ounce and a half of vinegar, and two table-spoonfuls of bay salt. In this fluid they should be allowed to macerate for two full hours; then well washed, and subsequently boiled in water for twenty minutes or half an hour; which is to be repeated again and again, when they may be dried and served, either alone or as a condiment.

The active principle of Veratrum Viride.—Mr. G. S. Scattergood, of Philadelphia, has ascertained by experiment that the root of this plant contains only 30 grains in the pound of veratria, but a comparatively large quantity, 300 grains to the pound, of a resinous principle. Both were separately administered to dogs, and by both the characteristic symptoms of poisoning by veratria were produced; but the resin causes by far the most rapid and marked reduction of the pulse.

Potash obtained from Animals.—The wool of the sheep contains this salt; and recently M. Maumenè, a French chemist, by subjecting it to the action of cold soft water, has obtained from it a kind of greasy soap, which, being heated to redness, a very fine carbonate of potash results, samples of which were shown in the late International Exhibition.

It is stated that this process is worked as a commercial speculation at Rheims.

Marmott Oil.—In the Dauphiny an oil so called is prepared from the kernels of the Alpine plum. The residuum is much esteemed by the people of the country for the property it possesses of fattening animals quickly; but they are obliged to exercise circumspection in its use; because, if given in too large quantities, it will act as a poison. This arises from the cyanogen it contains becoming in the stomach converted into hydrocyanic acid. As an antidote the fluid sulphate of iron is effective.

The nutritious principle of Bran.—It has hitherto been considered by chemists that the nutritive principle in bran was gluten. M. Mouriès, however, asserts that it is a new nitrogenous body, to which he has given the name of cerealine, with a portion of another well-known substance—vegetable caseine.

Cerealine is soluble in water and insoluble in alcohol. It acts as a ferment on starch, dextrine, and glucose; alters gluten extremely, giving to it a brown colour, and is the cause of the brown colour in bread.

Asinine Improvements.—Good days seem to be in store for the donkey, that much-abused, patient, and uncomplaining animal, for, besides the association recently formed in London for the purpose of giving prizes to costermongers who can produce sleek, well-fed, and well-tended animals of this description, Madame Urbain Rattazzi has taken the donkeys of Aix-les-Bains under her protection, and has succeeded in successfully carrying out a great race meeting in which only her long-eared *protégés* were allowed to contend. Everything passed off in the greatest good order, in the presence of more than 3000 visitors. In order that the susceptibilities of the four-footed competitors should not be wounded, everything was arranged as for a regular race meeting, for there were grand stands and reserved seats, clerks of the course, "gentleman riders," weighing enclosures; and the names, weights, and colours of the riders were duly published. There were three prizes, two of 20f. for donkeys of three years and over; and the grand prize of 30f. for donkeys of all ages, conditions, and countries. The distance was something under a mile.

THE VETERINARIAN, NOVEMBER 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

OPENING OF THE SESSION AT THE ROYAL VETERINARY COLLEGE.

The sessional course of instruction at the Royal Veterinary College has commenced under most favorable circumstances; indeed but seldom have we had to record a greater success.

The introductory address was delivered by Professor Tuson, and we have much gratification in being able to state that the gathering of friends from a distance was equal to any former occasion, as was also the attendance of town practitioners and office bearers of the body corporate. Without particularising the names of those present we must not omit to mention that, besides the professors, we noticed the veterinary surgeon-general of the army, the president and secretary of the Royal College of Veterinary Surgeons, several members of the council, and many army veterinary surgeons. There were also not a few members of the medical profession, who honoured the meeting with their presence, which, with the pupils—new and old—and their parents and friends, completely filled the theatre and all the approaches thereto.

We spoke last year of greater accommodation being required for these annual gatherings, and expressed a hope that ere long this pressing want would be supplied. Not only is the size of the theatre far too much restricted for such meetings, but almost equally so for the daily requirements of the class. We believe, however, that this will be the last time we shall have to complain of the insufficiency of its size, as we perceive that the governors of the college are fully alive to the necessity of providing ample accommodation for the instruction of the pupils in every division of their studies. At the moment at which we write a new dissecting room is being erected, which,

when completed, will vie with any similar building in the metropolis. To this is attached a demonstrator's room, and a covered enclosure for the slaughtering of animals required for dissection, and the making of *post-mortem* examinations of patients dying in the infirmary or purchased for scientific investigations. Great additions are also being made to the infirmary by the erection of several commodious loose boxes and other suitable buildings, it having been found that of late years the accommodation afforded to patients was totally inadequate to the number sent for admission, Lastly, but not the least in importance, is the erection of a chemical laboratory, with a professor's room attached, it having been rightly determined that *practical* chemistry and toxicology shall no longer be omitted from the curriculum of instruction. These things are a good earnest that other improvements will follow, and the college be made in every respect what it should be both as a scholastic institution and an hospital for animals. We know this to be the wish of the governors, and that long since they would have undertaken the improvements but for difficulties which have stood in the way.

Through the kindness of Professor Tuson we give the address *in extenso* in our present number, and to it we beg to refer our readers, that they may judge of its merits for themselves. It was well delivered, and was listened to throughout with marked attention—the silence being alone broken at times by the plaudits of the audience. It will be seen that it is rich in good suggestions for elevating the profession, and no doubt they will have their due weight with those whom they chiefly concern. The pupil of to-day is the practitioner of to-morrow, and in both capacities he must remember that the dignity of the profession is in a great measure intrusted to his keeping. It is not the respectability of an art which makes the man, but the respectability of the man which stamps value and dignity on the art he practices. Let this be ever borne in mind and all will be well. Enemies will vanish, friends be made, and the rightful position of the veterinary profession be effectually and securely maintained.

Extracts from British and Foreign Journals.

THE CROONIAN LECTURE ON THE COAGULATION OF THE BLOOD, DELIVERED BEFORE THE ROYAL SOCIETY, JULY 11, 1863.

By Joseph Lister, Esq., F.R.S., F.R.C.S.

Mr. President and Gentlemen,—The subject on which I have the honour to address you this evening is one which lies at the foundation both of physiology and pathology, and, on account of its great importance, has engaged the best energies of many very able men, among whom may be mentioned, for example, such distinguished Fellows of this Society as John Hunter and Hewson; so that it might well seem presumptuous in me to hope to communicate anything new regarding it, were it not that the constant progress of physiology and the allied sciences is ever opening up fresh paths for inquiry, and ever affording fresh facilities for pursuing them. Indeed, my difficulty on the present occasion does not depend so much on the lack of materials as on the complicated relations of the subject, which make me almost despair of being able, in the short time that can be devoted to a lecture, to give, in anything like an intelligible form, even an adequate selection of the facts at my disposal.

It may, in the first place, be worth while, more especially for the sake of any present who may not be physiologists, to mention very briefly some well-known general facts respecting the constitution of the blood. The blood, if examined by the microscope within the vessels of a living animal, is seen to consist of a liquid and numerous small particles suspended in it. The liquor is termed the "liquor sanguinis," the particles the "blood-corpuscles." Of these corpuscles a few are colourless, and are named the "colourless" or "white corpuscles." The great majority are coloured and cause the red appearance of blood, and hence are called the "red corpuscles." Soon after blood has been shed from the body, it passes from the fluid into the solid form. This depends upon the development in the blood of a solid material termed "fibrin," so called from its fibrous nature, consisting, as examined by the naked eye, of tenacious fibres, and having the same character also under the microscope. These fibres

form a complicated network among the blood-corpuscles, and from their tenacity are the cause of the firmness of the clot. Soon after the process of solidification or coagulation is complete, the fibrin exhibits a disposition to shrink, and squeezes out from among the corpuscles entangled in its meshes a straw-coloured fluid termed the serum, very rich in albumen —in fact, very similar in chemical composition to the fibrin, which, in its turn, may be said to be identical chemically with the material of muscular fibre.

The question before us, therefore, is, What is the cause of the development of this solid material—the fibrin? The subject may be looked at in two aspects: first, as to the essential nature of the process of coagulation; and, secondly, as to the cause of its occurrence when the blood is removed from the body.

With regard to the first point, the essential nature of the process of coagulation, different views have been entertained. John Hunter was of opinion that the coagulation of the blood —the solidification of the fibrin, was an act of life—analogous, in some respects, to the contraction of muscular fibre. This, on the other hand, was made very unlikely by the observation of his contemporary, Mr. Hewson, that blood may be kept in the fluid state by the addition of various neutral salts, but retains the faculty of coagulating when water is added to the mixture. Mr. Gulliver, on one occasion, kept blood fluid, by means of nitre, for upwards of a year, but found that it still coagulated on the addition of water. It seems exceedingly improbable that any part of the human body should retain its vital properties after being thus pickled for more than a year. But here I would wish to make an explanation of the use of this term "vital properties." When employing it I do not wish to commit myself to any particular theory of the nature of life, or even to the belief that the actions of living bodies are not all conducted in obedience to physical and chemical laws. But it appears that every component tissue of the human body has its own life, its own health, just as we ourselves have; and as the actions of living men will ever retain their interest, whatever views be entertained of the nature of life, so must the actions of the living tissues ever continue to be essential objects of study to the physiologist and pathologist. When, therefore, I use the term "vital properties," I mean simply properties peculiar to the tissues as components of the healthy living body.

Turning now to the other aspect of the subject of coagulation—the cause of the occurrence of that process on the escape of the blood from the living body—we find that here

again various theories have been held, which may be divided into mechanical, chemical, and vital. The mechanical theory was, that mere rest of the blood was sufficient to cause coagulation. I say this *was* the theory; but I believe it will be found to be still taught by many, that the cause of the coagulation of the blood in an artery which has been tied is its stagnation in the vicinity of the ligature.

As to the chemical theories, they have been various. One very natural view was, that exposure to the air was the essential cause of coagulation. Mr. Hewson believed that this was, at all events, an important element in the cause of the phenomenon; and many eminent physiologists and pathologists have held the same view, except that, instead of the air as a whole, the oxygen of the air has been supposed to be the important element.

Sir Charles Scudamore considered that coagulation was greatly promoted by the escape of carbonic acid; and more recently the evolution of ammonia has been regarded as the essential cause of the change. According to the ammonia theory, due to Dr. Richardson, of this city, the fluidity of the blood within the body depends on a certain amount of free ammonia holding the fibrin in solution, and the coagulation of the blood when withdrawn from the vessels is the result of the escape of the volatile alkali.

Then, as to vital theories. These have been held by many physiologists, among whom may be mentioned Sir Astley Cooper and Mr. Thackrah, who, from experiments which they performed, were led to the inference that the living vessels exert an active influence upon the blood, by which coagulation is prevented; and Mr. Thackrah went so far as to attribute this action of the vessels to nervous influence. The view that the blood is kept fluid by the operation of its natural receptacles has been advocated more recently by Brücke of Vienna, whose essay will be found in the *British and Foreign Medical Review* for 1857. Brücke performed his experiments on turtles and frogs, in which the blood remains fluid in the heart for days after death; and I feel bound to say that some of the facts which he has brought forward seem to me quite sufficient to show that the ammonia theory, whatever amount of truth it may contain, cannot be the whole truth, and cannot explain the fluidity of the blood within the body. For example, Brücke found that, having shed blood from the heart of a living turtle into a basin, and transferred, with a syringe, a portion of that blood into the empty heart of another turtle just killed, the blood thus transferred into the empty heart remained fluid for hours; whereas that which

remained in the basin coagulated in a few minutes. He also found that blood continued in the heart of a turtle long after the injection of air into the heart through a vein, till the cavities of the organ contained a foamy mixture of blood and air.

Yet it by no means follows that the vital theory and the ammonia theory are necessarily altogether inconsistent. It might be true, for anything we could tell, *à priori*, that the coagulation of the blood, when shed from the body, might depend on the evolution of a certain amount of ammonia, previously holding the fibrin in solution, and yet it might, at the same time, be true that the cause of the ammonia remaining in the blood in the healthy vessels might be an action of the living vessels retaining it there. It might be that an action of the living vessels might chain down the ammonia and prevent it from escaping, whereas, when shed from the body, it would be free to escape.

This notion was, I confess, at one time entertained by myself; and one of my earliest experiments was performed with a view to the corroboration of the ammonia theory as applied to blood outside the body. It seemed to me desirable that further evidence should be afforded of the effect of mere occlusion from air in maintaining the blood fluid. If the ammonia theory were true, then if blood could be shed directly from a living vessel into an air-tight receptacle composed of ordinary matter it ought to remain fluid. For this purpose I made the following experiment:—I tied into the jugular vein of a sheep a long vulcanised india-rubber tube, adapted by means of short pieces of glass tube at its extremities, both ends being connected with the vessel, so that the current of blood might be permitted to flow through the tube, and then continue its natural course. When it had been ascertained that the blood was circulating freely through the tube—which could be readily done by placing the finger on the cardiac aspect of the vein, which was then made to swell if the circulation was proceeding through the tube—pieces of string, well waxed, were tied at intervals of about two inches round the tube, which was thus converted into a number of air-tight receptacles containing blood, which certainly had no opportunity for the escape of ammonia. The tube was then removed, and I found, in accordance with the view that I was disposed to entertain, that the blood, instead of coagulating completely in a few minutes, as it would have done if shed into a cup, remained partially fluid in these receptacles after the lapse of three hours. But I have since found that, if the experiment be repeated in the same way as

regards its earlier stages, and if, after a few of the strings have been tied on, the tube be cut across, the blood which is in the part of the tube in the vicinity of the air, just like that which is in the air-tight receptacles, remains fluid in part for two or three hours: in short, that my precautions in ensuring that the receptacles should be air-tight were, in so far as they applied to that object, utterly unnecessary. I mention this partly as an illustration of the deceptions to which one is liable in this inquiry, and partly because the experiment thus modified seems to tell as clearly against the ammonia theory as the original one seemed to tell in favour of it. Those receptacles which had been formed by the application of ligatures before the tube was opened, afforded certainly no opportunity for the escape of ammonia, and yet in them the blood coagulated as quickly as in those which had communication with the air—implying that facility for the evolution of ammonia does not in itself affect the process of coagulation at all.

How, then, it may be asked, is the persistent fluidity of the blood under these circumstances to be explained? That will become more obvious in the sequel than I can make it at present; but in the mean time I may observe that there are probably two explanations: one is, the coolness of the tube; and the other (far more important), that the blood, in slipping through this cylindrical tube, had had little opportunity of being influenced by its walls. The portion of the blood that first came in contact with the walls of the tube had coagulated. And it is to be observed that in these experiments I never found the blood altogether fluid, even after a comparatively short time: there has always been a certain amount of coagulation, and only a certain amount of fluidity. A layer of blood having thus coagulated upon the internal surface of the tube, the fresh blood which continued to flow through it was not brought into contact with the walls of the tube at all, but with their lining of coagulated blood.

(*To be continued.*)

VIVISECTION NO CRUELTY.

The discussions at the various sections in connection with the late meeting of the British Association at Newcastle were exceedingly well attended, notwithstanding the unpropitious weather. In the section of physiology Professor Rolleston presided, and opened its proceedings in an address, the greater part of which was occupied by a review of the

recent publications in the three departments of experimental physiology—structural and comparative anatomy, and the microscope. The only part of the address, however, in which the general public will take much interest referred to the practice of vivisection, which has lately been discussed in the columns of the London papers, and which, says the *Times* in certain cases the learned professor, rather lukewarmly, it must be confessed, attempted to defend. With not very faultless logic, he concluded that it could not be cruel, because cruelty was only committed by ignorant, uncultivated people, such as children, gamekeepers, and the lower orders generally, and of course physiologists who practise vivisection are a highly cultivated class. Cruelty, he said, usually flowed from want of thought, want of culture, and want of refinement; but was it probable that men of a science demanding much thought, some culture, and not a little education, should resemble persons lacking all these things in the very points most directly characteristic of such deficiencies? Having proved to his satisfaction that the practice was not cruel, the learned professor next proceeded to show that it could hardly be said to exist. Experiments on living animals, he said, very frequently caused their death instantaneously; and when this was not the case, chloroform was almost invariably employed. In vivisection, as it was called, frequently the first step was the destruction of life, and that in a way as speedy, to say the least, as by the ordinary methods of destruction at the command of either the sportsman or the butcher. Surely a life might as well be sacrificed for increasing knowledge as for the production of flesh food, or for what was called sport. Experiment, too, was tedious and toilsome, and was, therefore, rarely undertaken out of wantonness or for the gratification of malignity. Undertaken for the ends of science, it had as good a claim to our sympathy as the practices of the "gentle craft" of anglers, to say nothing of those of the destroyers of warm-blooded animals. Ultimately the professor conceded that vivisection, in the strict sense of the word, was practised without the exhibition of chloroform where the question at issue had reference to the nerves, and he defended it here by referring to its utility in the cases of the two frightful diseases, epilepsy and diabetes. The former, frightful to witness, was yet more frightful to suffer—violence and danger for the moment, and dreariness of prospect for the future; and of the way to meet it vivisection had given us a hopeful foreshadowing. To diabetes—an equally terrible if less shocking malady—the applicability of vivisectional results

was even more direct than in reference to epilepsy, thanks to the studies of Dr. Pavy and Dr. M'Donald. Vivisection, the professor said, produced a certain amount of pain, but he asked, was this pain, voluntarily and of deliberate purpose inflicted in a few laboratories, greater in amount and duration than the mental pain, moral distress, and bodily agony endured in many a palace and many a cottage by the victims of these very two diseases, which of late years vivisection had most assisted medicine to combat.

In contradistinction to the above, we find by the public prints that a strong effort is being made in Paris to abolish vivisection. M. Dubois, Secretary of the Academy, has delivered a most eloquent speech against this barbarous practice. He described the horrors which he witnessed during one of these "experiments" in such vivid terms that some members of the Academy who had sanctioned them left the room. M. Dubois said that he found a number of horses being operated on, and it was so arranged that no less than sixty-four distinct operations could be performed, extending over ten hours, before the unhappy animal's sufferings were terminated by death.

CANINE MADNESS CURABLE.

The generally received opinion that this disorder is constantly fatal seems about to be seriously questioned. The *Abeille Médicale* publishes a letter from M. E. Decroix, a veterinary surgeon, in which he arrives at the following conclusions:—1. That a subject labouring under canine madness may die without any fit of frenzy. 2. That a subject in whom the disorder is characterised by such fits, their frequency is in the direct ratio of exterior provocation. 3. That a dog may, in a violent fit of anger, communicate the disease by a bite, and yet continue to enjoy perfect health; and, 4. That there are examples which show that communicated rabies is capable of cure, either spontaneously or by means of a proper treatment. The first two points were the subject of an article we gave a short time since; the third is rendered probable by an observation published by M. Putegnat; as to the fourth, the cases quoted by our author are certainly conclusive. In the first, a dog inoculated with the saliva of a man attacked with the disease, a fortnight after displayed all the symptoms of quiet madness, which however gradually diminished in intensity, and at length disappeared entirely in

the course of thirteen days, without any remedy being applied. The second case was much the same. In the third case, a man and his wife were bitten by an unknown dog. A month later the man died of confirmed rabies at the hospital. Two days after his death his wife was taken ill, and received into the hospital, where the physician pronounced her disorder to be rabies; nevertheless, she got better, and eventually recovered. The doctor then said he had been misled by the symptoms, and that the disorder was not rabies. The question at once presents itself—What was it, then? Either rabies has definite symptoms which may be easily recognised, or there must be a disorder hitherto unknown, which has the same symptoms and yet is not rabies. Is it not more logical to confess at once that rabies is not always incurable? The fourth case is one reported in 1777 by the surgeon Beudon. A sow and a little dog were both bitten by a mad dog, which afterwards ran away, but returned two days after in a pitiable state. Beudon had put it into a cage, and for several days it displayed all the symptoms of rabies. Beudon then caused vinegar to boil in the cage, so as to expose the animal to the fumes. By degrees the patient got better, and at length recovered. Six days after the infliction of the bite the sow became raging mad, a state which lasted seven hours. Beudon took advantage of a momentary respite to cause boiling vinegar to be let down into the sty. When this vinegar got cool the sow drank some, and got better; vinegar was then mixed with its food, and in the course of a few days the animal was medically cured. The little dog had no symptoms at all. It may now be asked whether these cures were spontaneous or owing to the vinegar. At all events, these cases show that there is a possibility of recovery; and M. Decroix thinks that among all the nostrums proposed as specific for this terrible affection, there may happen to be one of real value, but rejected on account of the preconceived opinion of the incurability of the disease.—*Galignani.*

THE IMPROVEMENT OF AGRICULTURAL HORSES SUITED TO THE WEST OF ENGLAND.

By Professor Brown, M.R.C.V.S.

(*Continued from p.* 635.)

In the second place, the various breeds of agricultural horses, so far as they can be defined, will call for some notice, in order to decide what existing varieties are adapted for the

several localities distinguished by soils of various degrees of tenacity, and by a surface variously undulated; and further, if necessary, what modifications of existing varieties may be desirable, and how they may be most easily produced.

This method of treatment involves the admission of the proposition, that the kind of agricultural horse best adapted to a particular locality can only be determined by reference to the agricultural peculiarities of that country in which the animal is destined to exist. Without pretending absolutely to isolate the western counties by a strict boundary-line, or to enter upon a detailed geological description,—or even to trespass upon the province of the agriculturist to any extent, we may be permitted to advance some general statements with reference to the broad leading characteristics of the localities with which we are immediately concerned.

Taking the principal parts of the West of England, we find some of the most important geological formations, comprising large masses of the old and new red sandstones, oolites, lias, Kimmeridge and Oxford clays, in addition to the chalks, affording fields for a mixed agriculture.

In Wiltshire are chalks, the upper oolite, and new red sandstone.

In Gloucestershire a large portion of the vale is upon the lias, some of it of the most unmitigated character; upon the higher grounds the oolites prevail; and below the lias the new red sandstone.

The soils of Dorsetshire include the chalks, with greensand, Kimmeridge clay, oolites, and lias.

Devonshire includes two geological groups of very dissimilar characters and agricultural capabilities. South Devon lies partly upon the new red sandstone, affording fine rich pastures. North Devon, Cornwall, and a part of South Devon, excluding the mineral deposits in the mining districts with which we have no particular concern, are upon the older coal-measure sandstone and slates of the Devonian age, affording barren hills on the one hand, and more fertile valleys with a soil formed of the *débris* of the higher rocks improved by cultivative processes.

In Somersetshire we come again upon a small portion of old red sandstone, but the characteristic formation is the new red with oolites and lias. Fine pasture-lands are found on the sandstone, and inferior pastures on the lias clays. In addition we have arable soils of a medium and tenacious nature. The more picturesque parts of the country are formed by upheavals of mountain limestone.

Herefordshire and Monmouthshire also furnish us with

extensive grazing-grounds upon the old red sandstone formation; these, however, carry us to the extreme verge of our prescribed boundaries.

This cursory view of the geological structure of the country which is our more immediate field makes us acquainted with some very significant facts.

In Herefordshire, Somersetshire, and South Devon, we have large masses of old and new red sandstones, upon which some of the finest pasture-lands in England are to be found. The importance of these pastures and their influence upon the breeding and cultivation of stock cannot be overrated. Indeed, the mere allusion to the great breeds of cattle that radiate in all directions from these centres, speaks decidedly of the capabilities of the localities. That improvement in the breeds of agricultural horses has not kept pace with the improvements in the breeds of cattle in the same country is evidently to be explained by reference to other causes than those affecting the quality of the land, or the nature of the herbage which it supplies.

Secondly, we gather from our geological observations that the soils are diverse in quality, as must reasonably be expected to be the case over any extent of country in any direction; and that, consequently, no one of the varieties of agricultural horses is adapted to the cultivation of the whole of the surface; as agricultural operations will be conducted upon the most tenacious clays through all grades of soil up to the lightest lands upon the chalk.

Mapping out our country for the purpose of according to each division an appropriate function, we may give to the great grazing lands of Devon, Somerset, and Hereford the office of rearing our farm-horses (in association with other stock), to be afterwards distributed, according to their capabilities, to the other counties, for the purpose of being employed in the several processes connected with arable culture.

The remainder of our discussion may be conveniently arranged under two divisions, still keeping in view the conclusions at which we have previously arrived concerning the varied properties of the soils required to be cultivated, and the necessity consequently existing for horses of various capabilities.

In the first section we propose to consider the several breeds of agricultural horses, viewed in relation to their distinctive peculiarities of constitution, speed, and power of draught; secondly, taking advantage of the obvious connection between the amount of physical power and speed of the

horse and the quality of the soil to be cultivated, we shall endeavour to associate the breed with the country for which it seems specially adapted; suggesting, finally, such a system of selection and general treatment as will tend to the improvement of those varieties which possess the requisite qualifications to entitle them to our favorable notice.

I. Varieties of Horses employed for Agricultural purposes.

A cart-horse, according to Dr. Johnson, is "a coarse unwieldy horse, fit only for the cart," a definition not complimentary, hardly correct, but certainly expressive of a popular notion. To associate the idea of coarseness with the animal seems perfectly natural. A rugged, ungraceful exterior is instinctively expected, while hard work and harder fare are awarded to him as his natural inheritance. Such a definition does not of course apply to the sleek and well-fed animal of the model farm, nor the magnificent specimen of the race daily seen in the brewer's dray; but to the cart-horse as he exists in hundreds of extensive establishments, roughly treated, badly sheltered, indifferently fed, and the victim to a host of diseases which spring up with mushroom rapidity under cover of neglect. Do we require specimens of glanders, farcy, grease, cracked heels, mange, surfeit, cataract, ophthalmia, thrushes, canker, quittors, sandcracks, ossifications, bursal enlargements? we seek them with invariable success in localities where draught horses are crowded into unhealthy sheds. In proportion to the improvements in the system of management, we find these various maladies less prevalent, until we come to the veritable agricultural horse, who ought to be the healthiest animal in existence, but who, generally speaking, has an unfortunate predisposition to certain affections, some of which are now almost confined to his class; prominent among them being grease and cracked heels, mange, diseases of the eye, side bones (ossified lateral cartilages), and bursal diseases of hocks and fetlock. The causes which lead to the constant occurrence of these affections will occupy our attention further on.

The numerous varieties of draught horses in England may be traced to some three or four originals.

The animal described by Professor Low as "the English black horse" is most prevalent, being in some degree connected with most of the common kinds of cart-horse. The original is characterised by a short, thick, ungainly body; strong, thick, and hairy legs from the knee downwards; his

action is slow and heavy, rendering him useful only for slow work. Consequent upon his general distribution, various crosses have of necessity taken place; and not only so, but the influence of very varied conditions has been brought to bear in different localities; so that we are not surprised to find all sorts of sizes and forms, from the smallest and thickest of cart-horses, up to the finest specimens of the London dray-horse. In all these varieties the characteristics of the original animal are in general very apparent, especially the hairy leg, circular body, and sluggish movements; for though intermixture with other kinds necessarily modifies these distinctions, it does not extinguish them. At the present time it would probably be difficult to obtain a pure specimen; but, among the numerous results of crossing, many animals might be selected which would possess in a marked degree the very important requisites, power and hardihood of constitution; and considering the numerical importance of the breed, its improvement cannot consistently be estimated as a matter of indifference.

The Suffolk horse, from his peculiar compactness of form, familiarly known as the Suffolk Punch, may be placed in the same category with the English black horse, or at least may be described as distinguished by similar characters—power, bulk, and slow movement, although his action is quicker than that of the heaviest English horses. The most common colour is chesnut, and the animal is considered to be superior to the English black horse; for if his pace is slow, his power of draught is remarkable, and some of the best specimens almost equal the dray-horse in bulk and beauty of conformation. From his extraordinary endurance and great strength, added to his willingness to employ that strength to the utmost, we must award him a very important position among agricultural horses. The Suffolk horse is not confined to the county which gives his name, but the breed is pretty extensively distributed, especially in Essex.

The lighter breeds of draught horses are represented by the Clydesdale and the Cleveland; both these animals are very distinct from the two kinds already considered.

The Cleveland is properly the coach-horse, but is largely used for draught purposes in the vicinity of towns, and in localities where the roads are good. The animal's conformation adapts him to quick work, and even the larger kinds, which are selected for draught, have a length of stride which enables them to progress with considerable freedom, and makes them particularly valuable where quick transit is an object. From various intermixtures between the Cleveland

and other varieties several modifications have arisen, according as the fancy of the breeder led him to prefer strength or fleetness. As an agricultural horse, he is only adapted for the lightest soils, but, from the readiness with which crosses may be effected, we shall give the animal the first position among light draught horses, from his possessing in an eminent degree the requisite speed. The prevailing colour of the *Cleveland* is bay, and those with black legs are always preferred. These animals are principally bred in the North, and from thence the dealers in various parts of the country obtain their supplies, purchasing four-year-old colts for the purpose of breaking and using in harness. The animals condemned to draught-work are, of course, those of inferior qualifications as to age, soundness, or appearance. Usually, the strongest carriage-horses, after a considerable period of service, finish their career in the cart or on the farm, whilst the lightest kinds supply street-vans and carriers' carts.

The Clydesdale may be placed intermediately between the heaviest and lightest draught-horses, combining, as he does, the very valuable qualities of power and free action. The purest specimens are distinguished by a body longer in proportion than that of the heavier English and Suffolk horse, legs free from long hair, fine coats, and great muscular development. Taking them as a class, their size is considerable; indeed, a small Clydesdale is unknown. The breed is generally employed, as we should expect it to be, on account of its important qualifications adapting it to a great variety of agricultural work. The colour is most commonly black, although the gray is frequently met with. The hind quarters have the peculiar droop characteristic of the Flemish horse and his crosses.

Although we have spoken of the several breeds under the names indicative of certain localities, it will not be concluded that the animals are exclusively cultivated in those districts. Practical men are well aware that large supplies come from Lincolnshire, Yorkshire, Norfolk, and other parts, without special reference to breed or system of crossing. A farmer having a good colt, no matter what his pedigree, is tolerably certain of a market for him at the proper time and place. At the annual Rugby Fair, in November, numbers of two-years old colts are purchased by farmers and landowners in the West of England, and taken to the grazing districts to be fed with the farm stock until of an age to be worked on the farm, or disposed of for that purpose. Under this system, the distinctive features of breeds are naturally merged one into the other; and so long as the agriculturalist obtains the

kind of horse he requires, he is probably not much disturbed by questions about the purity of his descent. An incident strikingly illustrative of this was recently narrated by a dealer who has been for years engaged in transactions having reference to draught-horses especially, and who spoke from personal knowledge of the circumstances. He had purchased from a breeder in Lincolnshire a two-years old colt, not described as a Clydesdale, nor, indeed, as one of any special variety, but coming under the common designation of a cart-colt. The animal was shortly afterwards sold by him, and was taken into Scotland. After an interval of about two years his attention was called by a friend to a thoroughbred Clydesdale just purchased by him for a large sum. With the facility acquired by long practice, he at once recognised his own horse of two years before; subsequent inquiry confirmed his conviction, and proved that the animal's claim to be considered a pure Clydesdale had no stronger foundation than lay in the fact of his having been for two years in the vicinity of the place. Doubtless he must have been descended from the Clydesdale race, and therefore have possessed some of the generic characters; but it is quite certain that he was not considered worthy of the title even by his breeder."

Should it be desirable to infuse other blood into our own breeds, the Normandy horse presents an opportunity which the scientific breeder may take advantage of. The animal, judging from his conformation, would be very desirable for hilly districts, as he is particularly described as "long and low." This horse has not, however, been sufficiently employed in our own country to enable us to do more than direct attention to him, as deserving the consideration of those who wish to avail themselves of an opportunity of crossing with a remote variety.

In an economic point of view the prices of the animals of various breeds, and of different ages, will be interesting to those not initiated in the mysteries of horse-dealing, and, accordingly, we step a little out of our province to furnish some general information on this subject.

Commencing with the heaviest breeds, we may place first the English dray-horse, whose price will vary from £100 to £300 for the best stallions; common kinds of English stallions may be obtained from £50 to £80; mares and geldings of the first class £60 to £100; common kinds £25 to £45; colts of two years, when entire horses of much promise, have been sold for £120; geldings and fillies will average £30 to £50 for the best; common sorts £15 to £25.

Suffolk horses will take very much the same range as that we have given above.

Clydesdales are seldom priced so highly as the best of the English or Suffolks: very good geldings and mares may be obtained at from £45 to £70; stallions £80 to £150.

Cleveland horses, being more highly cultivated for carriage purposes, vary indefinitely; the best stallions are rarely to be bought at all, except at fabulous prices; three or four-years old geldings and mares are sold at £50 to £90; those too coarse or too old, or otherwise not possessing sufficient quality for the carriage, may be obtained at all prices varying from £16 to £30.

Normandy horses, we learn, are valued at somewhat less prices than Suffolks and English horses.

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Clinique Vétérinaire, January, 1863.

ORIGIN OF COW-POX.

(*Continued from p.* 502.)

Spiniola has also successfully inoculated the matter of grease at the *outset* of that malady. In his treatise on Pathology, 1857, he writes as follows:—"I have had an opportunity in two cases of inoculating the *phymatose preservative,* or the variola of the horse. In the case of a horse I found pustules on the fetlock, one of which was still filled with lymph, and with this lymph I inoculated three horses and a cow, the first in the skin of the fetlock, the latter on the teats. The two horses had pustules which followed a course identical with that of the cow-pox; the cow also had pustules. and with the lymph taken from them I practised successive inoculations." I must say that Spiniola makes a variolous malady of that which I have described as pustulous grease, and which the German veterinary surgeons have named *phymatose.* In March, 1844, a horse was brought to the veterinary school of Padua, Professor Brucnolo

ascertained the existence of *giovardo cavallino* (cutaneous feruncle). The lymph collected from it was sent to Dr. Falen, who experimented with it ten days afterwards, and he obtained, he says, similar results to those observed in Venetia. The summary of these experiments is concluded as follows :— The vaccine virus in man does not exclude that of grease, and thus reciprocally the lymph of grease may be inoculated directly to man, or indirectly through the cow, with the same result. This lymph, by being transmitted from man to man, is capable of becoming *humanised*,* the same as the vaccine virus, and is a preventive also of smallpox.

For this communication I am indebted to the kindness of Dr. Lasègñe. The French doctors and veterinary surgeons have generally taken the observations and experiments confirmative of the ideas of Jenner too rigorously ; the negative facts, which they invoke, cannot weaken positive facts. It is said that twenty, thirty, forty, fifty times, the grease has been inoculated without success ; but that does not prove that it is not inoculable, for the proof is that Viborg and Coleman, who for twenty years had in vain practised the inoculation, did at length succeed in communicating the vaccine by operating on man and the cow, with the matter of grease. Another fact, which proves likewise that fruitless attempts at inoculation do not establish the non-virulence of a malady is, that M. Renault only succeeded in communicating rabies from the herbivora to the carnivora, after having made more than fifty unsuccessful experiments. I am perhaps the one amongst all others who has made the greatest number of unsuccessful inoculations with the matter of grease to the cow, still I do not conclude from my experiments that it does not communicate the vaccine.

The negative results of my experiments, and those of the author's which I have examined, were obtained under the most unfavorable conditions. On the one hand, it is not shown that it was the serous fluid of grease which was used for the inoculation, and on the other, that the animals of the bovine species were well selected. Here are my doubts. Jenner, and after him all the other observers, have recognised the fact that the vaccine appears oftener

* It is very much to be regretted that our learned colleagues of Germany, England, and Italy, have comprised under the name of grease so many different lesions which anatomically considered are so very distinct. They would then have avoided a confusion which prevents a good classification, and the exact definition of a malady. As M. Reynal has endeavoured to give us the opinions of the German veterinary surgeons relative to the origin of the vaccine from grease, he ought also to have given us the opinion of Professor Hermes, of Stuttgart, who does not believe in that origin.

on cows which have just calved, and which have their teats swollen by the milk. It is in the spring also, at the time of the change from dry to green food, that this affection is observed. Beyond these conditions, which provoke a congestion of the lacteal organs, the appearance of the vaccine is exceptional, and is, so to speak, exclusive to the milch cow. Male animals and heifers are very seldom affected. The statistics of M. Verbeyen leave no doubt on this point. Well! what sort of animals have been selected for the experiments? They have generally been heifers or males of the bovine species, if not cows in calf or cows exhausted by old age, successive gestation, and lactation. These animals are, as every one may see, in the most unfavorable condition to contract the vaccine by inoculation from the matter of grease. To resolve completely this question of comparative pathology, it is I believe of the greatest importance, for all future experimentors to take the matter for inoculation which is discharged at the *début* of the grease, and to select a fit subject of the bovine species for the experiment. For a long time a great number of medical and veterinary men have denied and still deny, that the vaccine of the cow originally came from the horse. The question seems to have advanced a step, and at the present time it is generally agreed that a malady of this animal does produce the vaccine. But what is this malady?

From the preceding considerations I believe that I have demonstrated that the eruptive, vesicular, or pustulous malady of the lower parts of horses' legs, which is designated by the name of grease, is one which is capable of transmitting the vaccine. This pathological point established, medical and veterinary practitioners have asked themselves the question whether this so-called *first period* of the grease did not constitute, in truth, a different malady, which should be named *variola equina*. Spiniola and Steinbeck, in Germany, Depaul and Bousquet in France, are of this opinion. They admit that the vaccine is the variola of the horse—a similar malady to the variola of man, the cow, and the sheep. I find, however, such a great difference between these that the analogy established by M. Depaul does not seem to me to be well grounded. M. Huzard has told you that he has inoculated 2000 sheep with vaccine matter without success. I have also inoculated without result. In the annals of science a considerable number of experiments are recorded, which prove that the vaccine has not been transmissible to sheep (*see Annales de l'Agriculture, de* 1800 *à* 1825). These inoculations, even when they have produced a slight eruption,

have not been a preservative of the sheep; whilst the produet of the proper pustule of their variola always protects them from attack. I therefore, until the eontrary is demonstrated, think that there is no identity between the virus of the sheep-pox and the eow-pox. If the opinion of M. Depaul were well founded, the cow-pox would be more eommon at the present time. Why should it not be regenerated by suecessive inoculation in the cow? But a last proof which establishes in my opinion, with perhaps more evidence, that the cow-pox is not identical with the sheep-pox, is that the latter is very eommon in sheep, whilst the former is extremely rare, and even amongst cows which live in the eontagious atmosphere of the sheep-pox. In eonclusion, I believe that the identity which has been sought to be established between the cow- and the sheep-pox, during the whole of the historie epoch of the vaecine, is eontradicted by experiment.

M. Leblanc.—It is already a long time sinee that, by a serious and unbiassed examination and experimentation, it was proved there was nothing less eorrect than the extraordinary results which have been proclaimed by a great number of medical and veterinary practitioners, relative to the origin of the vaccine, and also relative to the preservative power of the vaccine virus against a certain number of diseases in animals. M. Bousquet, the learned reporter of the commission, amongst others, has analysed and judged in his '*Nouveau Traité de Vaccine*,' (1818), the principal documents which exist on the origin of this disease; and one of the paragraphs of the summing up of the ehapter conseerated to the renewing of the vaccine is as follows:—"Seventeen experiments made without the least success by the author of this work leave little hope of ever producing the vaecine by the inoculation of the grease. The attempts recently made by M. Depaul do not give any better result." M. Bousquet might have also added that which resulted from the analyses made by him of the documents published up to 1818, that the facts announced as favorable to the production of the vaccine by the inoculation of the grease of the horse, are equally as unauthentic—even those of Jenner and several other observers, to whom the greatest confidence had been aeeorded. M. Bousquet had then judged very differently the observations published by Jenner from M. Bouley in the last sitting. I also have examined these documents, and I have eome to the same eonclusion as M. Bousquet. Sinee that time the faet communicated by MM. Maunoury and Pichot has presented itself. M. Bousquet has also analysed and judged it, and "not-

withstanding what is *incomplete,*" M. Bousquet said this observation has its value. In trying to interpret this phrase there is reason to suppose that if M. Bousquet considers this fact as *incomplete,* it is because, as he has made the observation himself, the horse which was the subject of the disease had not been followed, and there was no one to inoculate the fluid to which the production of the vaccine in Brissat, who had shod the horse, is attributed. M. Bousquet has also hinted, in a passage of his report, that it was to be regretted that it was not exactly known whether the horse was really affected with grease. Now it is certain that the mare at Toulouse had not the grease, and he is disposed to believe also that the horse of Châtres must have been affected with the pustulous disease which had prevailed at Rieumes. I am in a position to fill up the gap which has been considered so regretable by M. Bousquet. Here is the information which I have received respecting the horse shod by Brissat, and on the case of Châtres, as shown by these letters :—

"La Loupe ; *July 17th,* 1856.

"Honoured Colleague,—It is with pleasure that I transmit to you an answer to the letter in which you ask me divers questions concerning a horse affected with grease, and mentioned in a *notice* presented to the Imperial Academy by Drs. Pichot and Maunoury. I visited this horse on January 27th, and from the information I obtained from the proprietor I found that the malady had already existed for six months. It extended to the middle of the metatarsus ; the skin was hypertrophied, cracked, denuded of hair, covered with grapes (*bourgeons*), and enormous excreseences of a tuberous shape. They existed principally on the off hind pastern, and fell over the hoof so as to conceal two thirds of it. There was an abundant fetid discharge, and the parts could not be touched without causing great pain and bleeding. The horse is now nine years old. This was the state of the horse and the character of the malady about a fortnight before Brissat touched it. On receiving your letter, I again visited the case. I observed that the stable was small and low, and that there is no other opening but the door. The symptoms of the malady were the same, except the discharge, which is less, and the fetidity, which is null. In the same stable there is another horse, six years old, standing next to the one in question, which is healthy about the legs ; besides which there are three cows at the bottom of the same stable. These animals have always been in good health ; but are so crowded that they cannot all lie down at the same time, and the cows cannot get out without making the horses stand up to the manger. You

also ask whether the vaccine has prevailed, and if any children had been attacked by the smallpox, or whether any had been vaccinated. For my part I have not been called on, and I have not heard that the malady has prevailed for the last four years, but I have made inquiries of M. Honelbeck, a retired doctor, mayor of the place where Brissat resides, who has furnished me with the enclosed information. If ultimately you should require more information, write to me, and I will accede with pleasure to your request.

"Yours, &c.,

"Bonsergent."

"Belhomert; *Sept.* 1*st*, 1856.

(Inclosure.)

"Sir,—I hasten to transmit to you the information which you ask me concerning Brissat, a shoeing smith. For a long time this man has lived with, and worked for M. Poirier, the farrier of my parish, who not only has no cows, but has declared to me of never having shod any animals of the bovine tribe. I can also affirm that we have no cows affected with the vaccine, and that all the children are vaccinated in the first year of their age. This year none have been attacked with the smallpox. I may add, that the horse in question has been shod only once by the man Brissat, who put on the shoe while the proprietor held up the foot of the diseased leg in the usual way. Finally, I must state that Brissat was attacked by phlegmonous erysipelas, which invaded the whole of the back of his hand, a fortnight before he shod the horse; and add in the interest of science, that his constitution is lymphatic, and that he has been affected with lameness for the last four years arising from spontaneous laxation of the femur. I hope, dear sir, that this information may contribute to throw some light on the question submitted to the academy.

"Yours, &c.,

"E. Honelbeck,

"*Maire et Médecin.*"

The horse shod by Brissat was then affected with the grease in the chronic form, of at least half a year's standing; therefore there was nothing wanting to render it as complete as M. Bousquet could wish, except the transmission of the virus from the horse direct to children: this certainly was of the greatest importance. I knew of these two circumstances when the discussion was before the academy in 1860; and it was because I knew that the horse was affected with chronic

grease that I did not accept the fact of Châtres as an evident proof of the production of the vaccine from the grease of the horse's legs. I founded my objection on the great number of negative results which I had witnessed during the experimental course of M. Bousquet, and also on the negative facts given by other experimentors, even by Loy, who has not been able to produce the vaccine, he says, except by inoculating the matter from recent constitutional grease. I also founded it on the fact that fifteen days at least had elapsed since Brissat had been in contact with the horse and the appearance of the pustules. This long inoculation of the vaccine is unusual. Then the letter of M. Honelbeck had informed me that Brissat was affected with phlegmonous erysipelas, which invaded the whole of the back of his hand a fortnight before shoeing this horse. Then, again, I learnt from letters from MM. Honelbeck and Bonsergent that the horse shod by Brissat stood in a stable with three cows. All these circumstances take from this case of Châtres a great part of the value and the importance which has been given to it. Moreover, I have a right to be difficult to convince, having seen, during a long practice, men of all ages, amongst whom there were no doubt many who had never been vaccinated, nor had had the smallpox, attend on horses affected with the grease in all its stages without being affected with the pustules of vaccine. I have never found anything in these men, except, in some few cases, herpetic eruptions on the arms and face; the same as frequently happens to grooms who attend the infirmaries, and are obliged to dress all sorts of wounds and sores on horses; these eruptions are altogether local, ephemeric, and without general symptoms. It is probable that many of the cases considered as the production of vaccine by the grease or other affections of the horse's legs were similar to those eruptions which I have just mentioned.

It would really be most wonderful to see two maladies so different in every respect reproduce each other, when it is well known that the malady in question of the horse is not infectious from horse to horse; also almost all the cases of pretended production of vaccine by the grease have never been able to stand the test of a serious scrutiny, or conclusive proofs. Those who were supposed to have received immunity from the influence of these maladies have not been exempt from the attacks of smallpox, or the inoculation of the true vaccine; as, for instance, the famous case of Berlin, reported by Hertwig, mentioned by Verbeyen, and recalled by Bouley, in which it was thought that the vaccine was produced by divers maladies, even by gangrene. I could cite a multitude

of others which are found in works treating of this question. How can any one believe what is stated by certain authors, such as Sacco, for instance, who tells you almost at every page of wonders which, if they do not show a want of veracity, which I will not even suspect, prove how easily he collected facts, and how slightly he observed the numerous cases he has reported. This has led Sacco to believe in the uniformity of the virus which produced in man, and in almost all domestic animals, an affection of the same essence, but invested with extremely varied forms or characters. He was therefore never at a loss to find the vaccine. The variola in man and several animals, the vaccine in the cow, the variola in the sheep, the furuncle and the grease in the horse, the strangles in the same animal, the distemper in the dog, furnished him in abundance. This imaginary uniformity of virus he considered the vaccinal essence, an universal panacea, capable, by inoculation, of preventing all the maladies which I have mentioned. He pretends that this idea arose from observation, and that it has been confirmed by experiment. He would thus have rendered immense services even to small domestic animals, for in his translation Dr. Daquin states, in a note, that in an epizootie, the distemper in the dog, the malady propagated itself to cats, ducks, turkeys, and more particularly to cocks and hens. The idea of a uniformity of a variolous essence, common to several animals and man, but in a moderated form, is reasonable enough, because it applies only to a malady observed in man and in a small number of animals, and having a true analogy with each other, has been accepted to a certain extent by medical men of great merit and erudition. It will suffice to mention our honoured colleagues MM. Bousquet and Depaul. M. Bousquet has told us that he believed that the variola and the vaccine were the same malady. M. Depaul has gone further; he has stated that in his opinion all general eruptive, pustulous maladies of the several species of animals which had an analogy in their general characters with the smallpox in man, were in all probability of the same essence, differing only in their forms; and consequently he could understand their transmission from one species to another. Thus it was not repugnant to him to admit the variola of the horse, of the sheep, of the dog, &c., to the cow, and even to man, as the transmission of the vaccine is admitted at the present time; and it is only in this way that we can accept as correct in all its bearings the case of Toulouse, because he believes that the mare which furnished the virus to M. Lafosse was affected with

variola. I am convinced that this opinion of M. Depaul, of somewhat too great a latitude as I think, has been suggested to him by the exaggerations of Sacco, whom he has often quoted in his speech, by the surprising results announced by this prodigal inoculator, who has not the least doubt of the preservative virtue of the variola of man against the sheep-pox, the virtue of the latter against the smallpox, the virtue of the vaccine against the sheep-pox, and *vice versâ*. Well! there are many errors in that which has been written by Sacco, even relative to the reciprocal preservative properties of the virus of which I have spoken. Before then, experiments, judiciously made and severally followed up, which I need not mention, because you are no doubt acquainted with them all, demonstrated that there was nothing in the properties so inconsiderately claimed by Sacco, and that even the smallpox of man inoculated in the cow remained smallpox, and returned to man; that the vaccine, in passing to man, remained vaccine, and that there was nothing but the vaccine which preserved man, for a certain time at least, from smallpox. All this would lead us to believe that man, and each species of animal, has a peculiar varioloid malady, which does not modify itself in its essence, not even when engrafted from one species of animal on another. The case communicated by the commission of Toulouse, and observed by our learned colleague M. Lafosse, would tend to the contrary of that which I have announced; and also, in accordance with experiments carefully made and scrupulously noticed, would prove that there exists a varioloid which can be communicated to the cow, and present itself in this animal in the exact form of the vaccine; it would moreover tend to demonstrate that this varioloid has the preservative properties of vaccine; in a word, that it is the vaccine. If it be true, as we admitted just now, that after a great number of observations, varioloid maladies never modify themselves in their passage from one species of animal to another, it would be the horse which would, with the cow, possess the fortunate privilege of furnishing virus exactly similar in respect to the vaccine.

(*To be continued.*)

VETERINARY MEDICAL ASSOCIATION.

At a meeting of the council of the Association, held October 16th, it was decided that the first prize—a silver medal—be awarded to the essay on 'Abscesses, their Cause, Pathology, and Treatment,' bearing the motto, *Multum in parvo;* and that a certificate of merit be also awarded to the essays, *Dum spiro spero* and *Tallyo-Harkaway,* they being found to possess very great and nearly equal merit.

The winner of the medal was

Mr. E. G. Crowhurst;

and of the certificates of merit,

Mr. S. L. Buckley, and
Mr. J. Pyatt.

The award—also a silver medal—for the best anatomical preparation—the fore-limb of the horse injected—was made to Mr. Thos. Walley, and a certificate of merit for the second best to Mr. S. L. Buckley.

At an adjourned meeting of the council, held October 20th, certificates of thanks for their respective papers, read before the Society during the past session, were awarded to Messrs. E. G. Crowhurst, A. E. Banister, R. T. Hardy, T. Walley, S. L. Buckley, J. D. Overed, E. Hire, and B. Talbot.

It was also determined that the subject of the prize essay for the present session should be, "The preparation, composition, therapeutic and poisonous action of the common medicinal compounds of lead, copper, mercury, zinc, and barium; also the antidotes to, and analytical methods of detecting these agents, in their pure state, and in the viscera of an animal; likewise a description of the treatment of animals suffering from the effects of these poisons." The anatomical preparation to be, "The arteries and nerves supplying the teeth—incisor and molar—of the horse."

The following gentlemen were then chosen as the council for the forthcoming session, the former members having retired in accordance with the rules of the Association, viz.—

Professor Varnell, *President.*
,, Simonds, *Treasurer.*
,, Tuson, *Secretary.*
Mr. Pritchard, *Acting Secretary* and *Librarian;*

and Messrs. J. C. Broad, H. T. Batt, J. Rowe, J. Woodger, C. Low, and J. R. Cox, *Vice-Presidents,* from among the members of the profession in practice in town.

THE FORMATION OF A PROVINCIAL VETERINARY MEDICAL SOCIETY.

We have much pleasure in giving insertion to the subjoined notice of the formation of a Provincial Veterinary Medical Society in the county of York; an example which we hope to see quickly followed by other counties. We need scarcely add that our pages will always be open to the records of this and kindred associations; and we look forward with pleasing anticipations to the time when the inaugural address of the President of the Yorkshire Society will find its way, through the *Veterinarian,* to the home of every member of the profession. Heartily do we congratulate the founders of this new institution on the success which has attended their praiseworthy efforts to bring into closer union the scattered members of the profession, with a view to the promotion of medical science as well as the alleviation of the sufferings of the lower animals.

A preliminary meeting, the object of which was the formation of a Veterinary Medical Society, was held at the Queen's Hotel, Leeds, on Friday, the 9th ultimo.

The following gentlemen were present: viz., Messrs. E. C. Dray, J. Cuthbert, W. Broughton, and J. Mitchell, Leeds; Fryer, Fleetham; T. Pratt, Masham; J. Bale, Otley; R. C. Lord, Halifax; Anderton, Skipton; J. S. Carter and W. Williams, Bradford; Secker, Knaresborough; Horner, Morton; Pattieson, Dewsbury; and Taylor, Netherby.

The want of such a society having been long felt, rules were passed for its government; and the following gentlemen were elected office-bearers for the first year:—*President,* E. C. Dray, Leeds; *Vice-Presidents,* Messrs. Fryer, Secker, and Carter; *Treasurer,* R. C. Lord; *Secretary,* W. Williams. It was further arranged that the first annual meeting be held at Leeds, on the last Friday in January, when the president would deliver his inaugural address.

W. Williams,
Hon. Secretary.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD OCT. 14, 1863.

PRESENT:—The President, Professors Spooner, Varnell, and Gamgee, Messrs. Aitken, Braby, Broad, Dickens, Ellis, Field, Harpley, Harrison, Jex, Lawson, Mavor, Moon, Pritchard, Robinson, Wilkinson, Withers, and the Secretary.

The PRESIDENT in the Chair.

The minutes of the preceding meeting were read and confirmed.

After the general correspondence was read, a letter received from Mrs. Gabriel was brought before the Council, in which she stated "that, owing to the protracted illness of Mr. Gabriel, the late Secretary, she was induced to solicit the continuation of the allowance so generously granted to him by the Council of the Royal College of Veterinary Surgeons, he being so confirmed an invalid as to render its renewal a matter of deep importance."

It was moved by *Mr. Field*, and seconded by *Professor Spooner*—

"That an allowance of £50 to the late Secretary, Mr. E. N. Gabriel, be granted for the ensuing year."—Carried.

The Registrar reported that four deaths had occurred during the quarter, viz., Mr. John Brown, Leeds; Mr. Charles J. Milner, Minster-in-Sheppey; Mr. Matthew Poett, Army Staff Corps; and Mr. John S. Stockley, Royal Artillery. Also, that 190 copies of the register had been sold, and 140 copies gratuitously sent out to masters of hounds, news' rooms, and literary institutions.

The Secretary announced that the three anatomical specimens now on the table had been presented by W. J. Goodwin, Esq., to the Museum.

It was moved by *Mr. Wilkinson*, and seconded by *Professor Gamgee*—

"That a letter of thanks be sent to W. J. Goodwin, conveying the appreciation of the Council of his valuable gift."—Carried.

A Prize Essay 'On the Breeding of Hunters and Roadsters,' by Joseph Gamgee, was presented to the Library by the author.

It was moved by *Mr. Braby*, and seconded by *Mr. Field*—

"That a vote of thanks be given for the same."—Carried.

The House Committee in their Report recommended that a floorcloth for the museum, and a cowl for the chimney, also a carpet for the library, and half-a-dozen chairs for the students' room, be purchased.

It was moved by *Mr. Wilkinson*, and seconded by *Mr. Jex*—

"That the Report be received and adopted." Carried.

The Finance Committee reported that the quarterly accounts had been examined and found correct. The present liabilities amounted to £82 11s. 4d., which, when paid, would leave a balance in hand of £553 15s. 1d.

It was moved by *Mr. Pritchard*, and seconded by *Mr. Dickens*—

"That the Report be received." Carried.

It was next moved by *Mr. Robinson*, and seconded by *Mr. Jex*—

"That it be adopted." Carried.

The Parliamentary Committee laid before the meeting a draft of a Bill for an Act of Parliament to be entitled *The Veterinary Medical Act*. The draft contained eight clauses, which were read by the Secretary, after which each clause was taken *seriatim*. A lengthy discussion followed, and several abridgments and alterations were made. The draft of the Bill, as amended, was agreed to.

It was further ordered that the Secretary should submit the Bill to Mr. Garrard, the legal adviser of the College, for his opinion, and with a view likewise of ascertaining the cost and the expediency of bringing it, in the first instance, before the House of Lords, together with the necessary steps to be taken. It was further ordered that printed copies of the Bill be distributed among the members of the Council, that they might have the opportunity of well considering its details before the next meeting.

Cheques were ordered to be drawn for the current expenses.

By order of the Council,

WILLIAM HENRY COATES,
Secretary.

Veterinary Jurisprudence.

COUNTY COURT.

Before William St. John Wheelhouse, Esq., Judge.

IMPORTANT HORSE CASE.

Richardson *v.* Holmes.

In this case the plaintiff, who is a spirit merchant residing at Selby, sought to recover from the defendant, who is a veterinary surgeon at Beverley, the sum of £10 19s. 6d., being the amount of loss sustained by the former in consequence of his having purchased a mare from the latter, which, soon after coming into the possession of the plaintiff, was found to be a "roarer."

Mr. Parker (Weddall and Parker), solicitor, Selby, appeared for the plaintiff, and Mr. Summers, of Hull (for Mr. Pettingell), on behalf of the defendant.

Mr. Parker, in opening the case, stated that, at the last Howden Spring Fair, a man named Clough, cousin to the breeder of the mare in dispute, brought her for sale. The defendant saw the mare, and having examined her, purchased her for £23. Shortly after he had taken possession of her he met the plaintiff, who at once bought her, giving the defendant a profit of £9. Mr. Holmes received no warranty with the mare, but he gave *a written one* to the plaintiff, and it was on this warranty that the suit was grounded. Shortly afterwards the plaintiff found that the mare was a confirmed roarer. He (Mr. Parker) would call the breeder, who would tell them that about two years ago the animal suffered from inflammation; that she afterwards became an unsound one, and was sold to the defendant as such.

The first witness examined was *Mr. James Parker*, farmer, &c., at Dunkeswick. He stated that he bred the mare in dispute. About two years ago she had a kind of influenza. She appeared to be better in about a week. Witness thought she made a little noise. He was of opinion that she was a "whistler." He sent her for sale to Howden Fair, and she then made a little noise. In cross-examination the witness stated that he had had large experience in horses, and he knew that when they got cold there was a thickening in the windpipe. When he (witness) sent the mare to Howden Fair she was in pretty good condition. Witness had hunted her about a month before Howden Fair, and she carried him well after the hounds.

Mr. G. Turner, farmer, and licensed horse-dealer, Sykling Hall, said that in March last he was at Mr. Parker's, and rode the mare. He galloped her, and found she was not sound in her wind. She did not quite make a roaring noise, but something approaching to it.

Cross-examined.—Had had large experience in horses, and knew that if they took cold it would cause them to make a noise. He was of opinion that she would make a noise when she was purchased by the defendant. If the mare had been tried by butting at the ribs and by being ridden fast, and there was then no noise, he should have come to the conclusion that she was not a roarer. In reply to Mr. Parker, the witness stated that he should not think a horse which was unsound in its wind in March would be very sound in April.

Mr. Henry Taylor, member of the Royal College of Veterinary Surgeons, formerly of No. 3, Story Street, Hull, and now of Bridlington, was next called. He said that on the 3rd of June he was called by the plaintiff to see a bay mare. He found that she was a roarer, and he was of opinion that she had been a complete roarer for a great length of time. The disease was of much longer than six weeks' standing.

Cross-examined.—Witness tested the mare by getting on her back and galloping her, when he found a clear and distinct noise, showing that she was not a roarer of recent standing. Roaring might come on in a few months or weeks, but not in a few days. It would be more than two months from a horse being well, taking cold, and becoming a roarer. He was of opinion that the mare in question was a roarer of long standing. He said this after thirty years' experience. The mare also had a bone spavin on the near hock.

Mr. Cartledge, member of the Royal College of Veterinary Surgeons, one of the Examiners also of the Edinburgh Veterinary College, and formerly a pupil of the last witness, was then called. He said that on the 12th of June he was called to see the mare in dispute. He examined her only for roaring. Witness thought the roaring was of some standing, that it had existed for many months. He tested her by galloping and other usual modes. There was no external mark of recent treatment, and the noise was clear, sonorous, and distinct. If it had been recent, the noise would have been softer and the breathing more difficult. A horse might become a roarer without any swelling and inflammation, and without any apparent cause or illness.

This was the case for the plaintiff.

Defendant was then called. He stated that he had been a veterinary surgeon for thirty years, and for seven of that period veterinary surgeon to the body guard in India. He had had considerable experience in horses. When he first saw the mare in dispute he asked a few questions as to what the animal had been doing, and whether a warranty would be given. The witness Clough said that she had been hunting, and that he would give a warranty with her. Witness applied the usual tests for roaring, by galloping her along the turnpike and round a large field. He subsequently purchased her for £23, and the plaintiff soon afterwards gave him a profit of £9 on the mare. The person of whom he (defendant) purchased the mare then refused to give a warranty at that price. The mare was not a roarer when the defendant purchased her, and for an animal afflicted with this disease he would not give £5.

Mr. George Clough, of Kirkby-over-Blow, said that in April last he was requested by Mr. Parker to take the mare in dispute to Howden Fair. The defendant purchased her, and tried her on the turnpike road. To his (witness's) knowledge, the defendant did not gallop her round a field. He was directed by Mr. Parker to sell the mare without a warranty. He sold her for £23, and the defendant soon afterwards sold her for £32. Witness never told the defendant that she was as good a mare as any gentleman need have. The defendant offered him a warranty book to sign, but he refused to do so, as he had had instructions to give no warranty.

Robert Clark, a horsebreaker residing at York, deposed to being present when defendant purchased the mare. He heard the witness Clough tell the defendant that the animal was all right, and a perfect hunter.

Mr. Summers and *Mr. Parker* having addressed the Court on behalf of their respective clients, his Honour gave judgment for the plaintiff for the amount claimed, and costs.

GUILDHALL.

Before Alderman Phillips.

MORE DELUSIONS RESPECTING RABIES IN THE DOG.

Michael Reed was summoned for unlawfully and cruelly ill-treating a dog.

Ann Neall said, on the afternoon of September 19, the defendant killed her dog, a small black and tan spaniel. He took a knife from her son's shop, followed the animal to her door, and plunged the weapon three times into the body of the dog. It was stabbed to the heart and died in two minutes. She had applied to the Society for the Prevention of Cruelty to Animals, and they had declined to interfere.

Defendant said his child—a little girl two years old—was bitten in the leg by the dog. He certainly did take up the knife and kill the animal, but had not been guilty of any cruelty, as he stabbed it to the heart with one blow. The only cruelty exercised on the occasion was committed by the complainant's son, who kicked the dog out of the shop.

Alderman Phillips said the defendant had been guilty of unnecessary violence, and in the excitement of the moment had acted in a manner that showed he had been mistaken in his apprehension, for the death of the dog could not have saved the child.

Defendant said his child was dear to him, and he killed the dog to save her from hydrophobia.

Alderman Phillips assured defendant that it was all an illusion believing that the child could be affected by any subsequent disease in the dog.

Defendant said he was ignorant of that.

Alderman Phillips said he had the power to fine defendant £5, or even to send him to prison without a fine, but he would not deal so severely with him under all the circumstances.

The defendant was then fined 20*s.* and costs.

MISCELLANEA.

A HORSE WARRANTY QUESTION.

A. sold to B. a horse with the following warranty:—

"B——, *Nov.* 5, 1862.

"Received of Mr. B. £ for a brown horse, 3 years old, warranted sound.

(Signed) "A."

The horse turned out to be a "rig," and was consequently of much less service than if otherwise while in B.'s possession.

Is a "rig" an *unsound* horse within the meaning of the warranty?

If any correspondent of the *Veterinarian* knows of any legal decision upon the point, and will give it with references, he will much oblige.

X. Y. Z.

Oct. 26, 1863.

THE

VETERINARIAN.

VOL. XXXVI. No. 432. DECEMBER, 1863. Fourth Series. No. 108.

Communications and Cases.

ON SOME OF THE DISEASES OF THE RESPIRATORY ORGANS OF THE HORSE AND OTHER ANIMALS.

By Professor Brown, M.R.C.V.S., London.

(*Continued from p.* 601.)

In the case selected in our last, to illustrate the complication of catarrh with disease of lungs and liver, we remarked particularly upon the loss of appetite and the immediate prostration, gradually increasing to a fatal termination. In our post-mortem examination we noticed extensive disease of lungs, with fatty degeneration of liver, sufficient to account for the frequent non-success of the treatment.

The important question refers to the diagnosis of such a state of parts; so far as the liver is concerned, we take for granted that the existence of previous disease will be admitted; enlargement with fatty degeneration are not produced in the course of the ten days or fortnight of the animal's illness, during which he scarcely feeds at all. How long such organic affection has existed it may be impossible to conjecture, unless the whole of the animal's previous history were before the examiner, who would then be in a position to point out what kind of food, given at a particular period, had probably induced the disease.

Fat elements in some form, either starch, or sugar, or oils, when given in excess, and in a state to be assimilated, are known to act in the production of such a condition; of this

fact, the feeding of the Strasburg geese is a notable exemplification, these animals being kept in a warm room, and crammed with Indian corn, for a period of, we believe, about six weeks, suffer from enlargement of the liver, with fatty degeneration, to a remarkable degree.

Under the most favorable circumstances it seems that some weeks are necessary even for the artificial production of the disease. Instead of weeks, however, we may reckon years in many cases. One very remarkable instance has recently been sent by Mr. Gowing. The subject of the malady was an old, favorite cat, who had lived in ease and plenty for years; often, doubtless, being regaled with portions of rich and stimulating food, and indulging the feline taste for warm corners unchecked. Upon the animal's death occurring an examination took place, and the liver was found to be much enlarged, although tolerably firm, light in colour, and of an uniform texture. Under the microscope, the appearance was most peculiar, nothing but oil-globules of every size could be detected; only after repeated portions had been taken was a single liver cell discovered, and that so charged with fat as to be scarcely recognisable. The specimen might have passed for a drop of cream, so completely did the fat-globules replace the normal elements.

During the very slow progress of the natural disease very little indication of derangement may be expected; and even when the changes are considerably advanced there is nothing absolutely diagnostic.

Plethora may be considered to be one symptom; but plethora may exist without any serious organic alterations in the liver, although it is scarcely possible for the gland to escape altogether when there is excess of fat in the system. Before any signs of disease are apparent, the mischief is often irremediable. Not that the patient may not recover from the attack under which he is for the time prostrated, but that the gland will be left in the same condition, or but little altered in any case for the better.

When we take into account how important is the agency of the secretion from the liver in assisting the assimilative process, it is very remarkable that extensive organic disease, leading to perversion of function, should be compatible with seeming good health and spirits.

In some instances the deterioration of texture is so marked that it cannot be doubted that the healthy function is well nigh arrested, and yet until the animal dies from some other malady, probably no such condition is suspected. At first, one would be inclined to expect an accumulation of

effete products in the blood, with such rapidity as to lead to energetic symptoms of derangement; but we have still to reflect upon the slow development of the disease and the compensating functions of the kidneys and skin. How much of the *débris* is removed through these channels we have not sufficient facts at present to enable us to determine exactly. But we may give them credit for an enormous capacity; and in the event of an interference with their action from any cause, we may anticipate the direst results. Something of the kind occurs, most likely, when an animal suffering from fatty disease of liver is attacked by influenza or catarrh; the immediate derangement of the functions of skin and kidneys will occasion the rapid contamination of the blood by materials which, up to this, have been eliminated by their agency. The lungs are not equal to the removal of the accumulated impurities, and thus the blood, deprived of the ordinary methods of purification, constantly receiving the products of further decomposition, becomes at last inadequate to the support of vital operations; the circulation loses in force; the blood collects in the lungs, deposits of lymph, occur, to the serious interference with the functions of the parts.

Primarily, the liver disease must be estimated as a serious item; secondly, the loss of the compensating emunctories from febrile disease; and, further, the depressing action of the impure blood upon the brain and nervous system, producing the marked prostration.

Thus, we have to deal with a case of very complex nature, apparently a common febrile attack; but really including deterioration of the blood from defective assimilation, and imperfect elimination of impurities; a tendency to congestion, particularly of the lungs, leading to a gradual decrease of respiratory surface; and still further derangement of the blood from deficient supply of oxygen; and, lastly, diminished animal heat apparent over the whole surface.

Treatment under such a combination of unfavorable circumstances, cannot be undertaken with any sanguine hopes of ultimate success; although, if the poisoning of the blood has not advanced too far, there is a possibility of restoring the patient to a state of comparative health. Whether the fatty degeneration of liver is a remediable disease, must ever be a matter of speculation. As we possess no positive method of diagnosis, it is not permitted to assert how far the disease may be curable, but we have no question that this state of the organ is compatible with the animal's existence.

The main difficulty is the condition of the blood, and the obstruction of the usual outlets for the effete matters which are rapidly destroying the animal. Prostration being a prominent symptom puts bleeding at once out of the question. Purgatives meet with no more consideration, from the fact that spontaneous diarrhœa is frequently the immediate cause of the animal's death.

Diuretics, diaphoretics, and antiseptics, however, having no objectionable action, may be employed for the purpose of restoring, as far as possible, the functions of the skin and kidneys, and rectifying the morbid secretions.

How far it is possible to impart oxygen to the blood by the exhibition of salts containing an excess of it, is an open question at present, but no harm can result from the use of chlorate of potass, permanganate of potash, and when it can be obtained, the sulphite of soda, whose antiseptic action seems to depend upon the large amount of sulphurous acid it contains; the hyposulphate being more accessible, we have given in the drinkwater two ounce doses daily with apparent benefit. By the use of the agents quoted, or of others having similar properties, we fulfil the first indication; that is to say, we attempt the chemical purification of the blood, but an equally urgent necessity exists to protect the lungs at the commencement of the attack by counter-irritants. Accelerated respiration is usually seen very early. Auscultation indicates increased density from the first; the circulation, though feeble, is always quick, and to a certainty a large portion of the blood sent into the lungs will remain there, unless we can establish a derivative action. So long as the blisters or cataplasms are applied to a surface still retaining enough susceptibility to be acted upon, we may hope for a favorable result. But as soon as the skin ceases to be sensitive to the stimulants used, we have absolute evidence that the prostration is bordering upon collapse.

Warned by many examples, we do not hesitate on the first appearance of disturbed respiration or increased bronchial sound, to apply mustard to the sides or front of the chest or both, and to repeat the application in a few hours, should the lungs not experience relief.

Tonics we have exhibited almost at the beginning in every case that has been treated successfully, preferring bark and mineral acids to all others, in the proportion of ten drops of nitric or hydrochloric acid to a pint of water containing in mixture half an ounce of bark. This dose may be given once a day, while febrifuge agents, the nitrate of potash, for instance, with a little nitric ether; and if the mucous

irritation should require it, tincture of opium or hyoscyamus may be added.

From this combination of tonic and febrifuge medicines the happiest results may be expected.

Among the agents naturally suggested, will be calomel, its use, however, is only tolerable when the greatest caution is employed. If constipation is present at first, the fæces being hard and light coloured, a dose of half a drachm, with ten or fifteen grains of opium, may be given and repeated with advantage; to the continued exhibition of the drug, however, we cannot but ascribe very disastrous consequences, and having regard to the strong feeling which exists in the minds of many practitioners of eminence against its use; he who employs it must be prepared to risk incurring the charge of recklessness in the treatment of cases such as we are now discussing.

An unfavorable termination will be prognosticated if the patient continue to refuse food, if the circulation increase in frequency, the heart's action become bounding, the lungs more and more obscured, the surface cold, and the counter-irritants produce no effect; but should the appetite return, the respiration become quiet, the surface warm, and the blisters should act with energy, even though the pulse may continue for a long time excited and the debility remain, there is strong reason to expect ultimate recovery, under a judicious continuance of tonic treatment and good nursing.

(*To be continued.*)

THE OPERATION FOR ROARING IN THE HORSE.

Leeds; *Sept.* 15, 1863.

Gentlemen,—I shall feel obliged if you will inform other members of the profession, as well as myself, the *modus operandi*, and the effects of the "operation" which has been chiefly introduced by that highly respectable gentleman, Mr. Robinson, M.R.C.V.S., Tamworth; namely, the application of the actual cautery to some portion of the larynx or trachea, for roaring.

I have seen some letters on the subject in *Bell's Life*, although I would rather that your excellent Journal had been the chosen vehicle for all discoveries connected with our

profession, so as to enable your readers to test and judge of their accuracy.

I am, gentlemen,
Yours respectfully,
EDW. COLEMAN DRAY, M.R.C.V.S.

To the Editors of 'The Veterinarian.'

[We have no hesitation in expressing our conviction that our friend, Mr. Robinson, will readily comply with this request of Mr. Dray, for we know that Mr. Robinson has but one desire by which he is actuated; namely, to maintain and advance the interests of the Veterinary profession. In him is no charlatanism. We have known him long.—EDITORS.]

AN INVETERATE CASE OF STRINGHALT.

By THOMAS GREAVES, M.R.C.V.S., Manchester.

THE very interesting controversy in the last two numbers of the *Veterinarian*, respecting the pathological nature of stringhalt, together with the fact that during the same time an unusually severe case has occurred in my practice, must be my apology for transmitting the following remarks.

The subject of this affection was a bay horse, rather more than half-bred, from fifteen to eighteen years old, and for the last four or five years he has run in the prison van of this city. During the whole of that time he has been affected with stringhalt in both his hind legs, and how long anterior to that date I cannot say. At times he would appear to be worse than at others. He worked very well, being always less affected whilst at work than when standing in the stable. He was free from lameness, and there was an entire absence of any indication of either bone or bog spavin. About two months before his death this affection became more severe, when he was allowed rest, was bled and physicked, had the heels of his shoes raised, and was put through a course of mercurial medicine. He became so much improved that he resumed his usual work, which he performed very satisfactorily up to the day before his death. On that day, even, he acquitted himself in his work without any undue excitement or distress; but after he had been in the stable a short time he broke out into a profuse perspiration, and his excited action became most painful to witness. The spasmodic contractions

were intense and incessant, keeping him in a perpetual dance; he suddenly and most violently snatched up one foot just before the other foot reached the ground, his hind feet dug and tore up all the pavement of the stall within their reach, and he continued in this state for about twenty-four hours, the perspiration pouring off him all the time. During this time I had bled him almost to syncope, gave him repeatedly powerful doses of anodyne medicine, and applied hot fomentations to his legs and loins, but all was of no avail. This desperate, unnatural action, appeared to be perfectly irrepressible. I much regret I did not use chloroform, but my previous experience of that medicament has not given me much faith in its utility. On representing the case to the owner, he at once consented to have the horse destroyed, which was done.

Thinking this a likely subject from which I could glean some useful information; one likely to throw some light upon this vexed and disputed physiological question as to what is the nature, and where is the seat of stringhalt, I felt an irresistible desire to make a careful and minute *post-mortem* examination. I therefore resolved to set aside one half day especially for the purpose, and if possible clear up this obscure perplexing matter. But such are the inexorable uncertainties and contingencies of a professional life that I found it to be utterly out of my power to bestow more than half an hour to this extremely interesting investigation. Consequently I was not able to satisfy myself as to the nature or the seat of the disease; but the unmistakeable proofs I met with did satisfy me that some of the theories that have been advanced about this disease are fallacies, which ought and must be removed. It cannot be expected that during the limited time I had to devote to the investigation, that I exposed the spinal marrow from the cauda equina to the dorsal region, as was my intention; for to saw the sacrum and each bone of the lumbar vertebra on either side, and remove the pieces; to carefully and minutely trace each nerve from its remotest extremity through its plexuses, its ganglions, its foramina, and its facets, into the spinal chord; to inspect the three columns of the spinal marrow, and the sheaths or coverings, would of necessity occupy many hours to do satisfactorily. To lay open the vertebral canal, and to separate the intensely strong ligamentous connection, is much more easily said than done. What I did was briefly to examine, 1stly, whether there was any hardness or corrugation, the effect of cramp, in any part of any of the muscles, but I could find none. 2ndly. If any ecchymosis existed in the

muscles, fascia, periosteum, or nervous coverings, but I could find none. 3rd. Whether the substance of the nerves themselves had undergone any alteration in their colour, or their size. The impression upon my mind has always been, that we have the sciatic nerve changed to a straw colour, it is shrunk and withered, but this was not the case. The crural and sciatic nerves were full, plump, ample, and healthy, looking white in colour during the whole of their course to their foramina; and their membranes, as far as I could judge, appeared fine, delicate, and healthy. 4th. And last, but not least—the joints, the hip, stifle, hock, fetlock, and sessamoids, were most certainly and entirely free from the slightest degree of disease. There was an ample supply of synovia, which was perfectly pellucid, and the articulatory surfaces were exquisitely smooth and beautiful. In the hock joint there were the sulci, which are almost always met with either in the upper articulatory surface of the astragalus, or in the articulatory surface of the tibia. It appears to me that Dr. Busteed has fallen into the same opinion that Mr. W. C. Spooner, of Southampton, once held, viz.: that these sulci, or oil reservoirs, are lesions or ulcerations, or decay of cartilage; and he contended for this theory in that memorable controversy in the *Veterinarian* for 1837 and 1838, with Professor Dick. Although these two eminent writers and physiologists bestowed very great attention to this subject, in fact one of them made it his special study for seven years, neither of them seemed to entertain the remotest idea that stringhalt was one of the products of this condition of the joint. The other day, being in the neighbourhood of our knackers' yards, I called and inspected the hocks of a score of dead horses, and I found in every one of them these sulci more or less distinct. Now it cannot for one moment be supposed that every one of these animals was affected with stringhalt. The sulci were equally distinct, as in my case above alluded to. Professor Dick, at page 186, *Veterinarian* for year 1837, says, "These sulci are found in one form or another in all true joints." Again, at page 433, year 1837, "They are found in the best formed hocks." Professor Spooner says, page 378, year 1837, "The cases of disease of the articulation between the tibia and astragalus are few indeed." No, we may depend upon it, if that joint was actively inflamed, the symptoms would be just the reverse of stringhalt. Mr. Pritchard, of Wolverhampton, says, page 535, year 1837, "When the lameness is in this joint it is far from being obscure. It is the true hock joint, and far the most extensive of the seven articulations of the tarsus; it possesses the greatest surface of synovial mem-

brane, which, unlike the fibro-ligamentous and fibro-cartilaginous structures of joints rarely take on acute inflammation; they are structures much less vascular, much less sensitive than the synovial membrane, and we have daily proofs of ossification, and even anchylosis in the minor articulations of the tarsus, unaccompanied by lameness." My own convictions are so strong, that I think the question ought to be set at rest for ever, that whatever stringhalt may be, and whatever tissue is the seat of it, the hock joint is most certainly not in the slightest degree implicated.

THE PATHOLOGY OF GLANDERS.

By A. C. Shaw, late V.S. 18th Hussars, Hatfield, Doncaster.

The term glanders is employed to express one of the forms of tubercular disease in the horse.

It is hereditary, arising in most instances from internal taint, excited by certain influences, more especially those opposed to a vigorous habit of body, such as imperfect nourishment, improper diet, deficiency of fresh air and exercise, large evacuations supervening on various diseased states, exposure to cold and wet, change from well ventilated to foul stables, severe catarrh, over-exertion, and the absorption of the virus through the cuticle. Any cause of constitutional exhaustion continued, may generate glanders in almost any horse.

The symptoms of glanders are various, which must always be the case in tubercular disease affecting so many different parts. The ordinary appearances are a continuous discharge from one or both nostrils, with or without enlargement of the submaxillary glands, or ulceration of the Schneiderian membrane; which discharge is generally unaccompanied by any disturbance of the circulation, a marked characteristic of this formidable disease.

Its duration depends on circumstances, and the parts affected. In some cases a deposit of tubercular masses takes place in the lungs from constitutional causes, independent of inflammatory disease, or any previous disturbance of the circulatory system. In other cases, the deposit of tubercles may be the immediate consequence of active inflammation, giving rise to the regular scrofulous phthisis

which we observe in the glandered horse. The tubercles rapidly increase, becoming abscesses, and discharge purulent matter. The parts most liable to the deposit of this strumous globule are the lungs, liver, spleen, lymphatic glands and vessels, the lining membranes of the nostrils and joints, the membranes of the brain and skin of the heels. The character and progress of this tubercular deposit is very remarkable. It resists absorption, and continues to grow where there is not any inflammation whatever to be found.

It is well known to those who have examined the lungs of horses destroyed by, or in consequence of accidents, that the small miliary tubercle is frequently present in the lungs of the most healthy-looking animals, without the slightest evidence of past or present inflammation. The whole history of tubercular disease in the horse confirms the fact that constitutional peculiarity is sufficient, under certain circumstances, to cause a deposit of tubercles independent of inflammatory disease, although congestion and inflammation favour their growth. But that they can, and do progress without the aid of any such condition is beyond doubt.

I have met with horses in country places looking well and working, at the same time having a considerable portion of the cartilage of the nose removed by phagedenic ulceration, similar to lupus, that eats away the nose of the human subject. I have also met with cases where the synovial membrane and cartilages of the shoulder-joints were affected, being surrounded by matter of a grey colour and pulpy consistence, contained in sinuses, not unlike the disease called white swelling of the human subject.

Phagedenic ulceration of the skin of the heels, characterised by its slow progress, resistance of remedies continuing without much pain, heat, or swelling, but with discharge and deposit, healing and appearing again, is also a form of tubercular disease. Hydrocephalus and rachitis I have observed in foals the offspring of glandered mares. Tabes mesenterica and lumbar abscess, arise from the same diathesis.

Feeding on linseed, bran, and other improper articles, deprives the stomach of the power of digesting sound food, by impeding its functions and perverting assimilation; consequently the blood becomes encumbered with impurities, such as lithic acid, and other morbid particles. A slight cold is sufficient to excite active disturbance, when organic depositions, epidemics, rheumatism, and a legion of diseases follow. Fatness, under ordinary circumstances, must be viewed as destructive disease; the fact of fat being deposited in irregular places, such as the heart and liver, leaves no doubt on

the subject. This morbid state of the system generates glanders in horses of hereditary tendency. I have met with many cases occurring to officers' horses soon after joining regiments, which were perfectly free from the disease, that could not be traced to any other source. The unhealthy condition of the blood so favorable to the deposition of the granular albuminous tubercle of glanders, appears to arise from a deficiency of the fibrinous portion which weakens its motion in the capillaries, and consequently exudation succeeds. Where albumen is in excess, vitality is lower than natural, and associated with a reduced standard of health, giving rise to albuminous deposition in masses, which increase and terminate in ulceration, vomica, hæmoptysis phthisica, and ultimately death.

With those facts before us, I may safely assert that glanders arises chiefly from a strumous diathesis, generated by any of those causes that reduce the vital energies or deteriorate the blood. Where the disease is contracted by the absorption of the virus through the cuticle, local and constitutional effects are produced according to the diathesis, condition, &c. In some cases pimples appear on the olfactory membrane with irritation and congestion of the lungs, and a scanty greenish discharge from one nostril, and sometimes from both; the lining of which presents a glassy or icy appearance, with reduction of temperature. Enlargement of the submaxillary lymphatic glands generally takes place in the advanced stages from deep ulceration in the nostrils. Animals so affected may appear in good health, the pimples and nasal flux often disappearing, and all the symptoms of glanders being absent, with the exception of a deposit of tubercles in the lungs. Should the subject be taken good care of, this chronic state of glanders may continue for an indefinite length of time. In other cases, active disease will run its course rapidly.

We observe a similar state of the system in the cow, as in the linseed fed horse, giving rise to those enormous exudations we witness in pleuro-pneumonia. There is every reason to believe that this formidable disease had its origin, and is perpetuated, by the mismanagement of the supplies of the stomach. The various kinds of food employed for fattening purposes, load the blood with morbid particles, which depress the nervous power of the stomach and other digestive organs, so that eventually the stomach, in which we must remember the blood-forming process commences, becomes incapable of preparing proper materials for the healthy supply of the blood, and, consequently, such a re-

duction of life-power in the capillaries and nerves, that plastic or fibrinous exudation takes place, forming organic germs. The albuminous tubercle has not this power, its cells degenerating as it enlarges. An animal in this state of nervous depression is deprived of the natural power of resisting disease, and becomes an easy prey to epidemic infection. It only requires one case to be introduced or generated amongst stock to communicate the disease to the whole herd. I therefore emphatically maintain that if the stomach was treated on sound physiological principles as regards its supplies of food, misdirected digestion would subside, and the disease in question would be very soon unknown in this country. This cannot be accomplished by the whole catalogue of nostrums, drugs, and other reputed remedies, that only serve to foster the disease by deranging the healthy functions of the stomach, and preventing the establishment of a sound and vigorous habit of body, the only security from the malady.

When such a departure from health and vigour occurs, in consequence of the introduction of unsound particles into the blood through the stomach, the atonic form of diseased action is set up, the capillaries relax, enlarge, and destruction of tissue follows. This state of affairs mocks the skill of the medical attendant, he finds the *vis medicatrix naturæ* powerless, and exudation going on; his remedies, though ever so well adapted, are unavailing here, through want of power in the stomach and the other digestive organs to appropriate the medicines suitable to the case. Therefore the proprietors of stock should not blame the veterinary surgeon because he is unable, at once, to remove this great evil inflicted on the digestive and formative processes, by a long course of improper feeding.

OBSERVATIONS ON SOUNDNESS.

By R. H. Dyer, M.R.C.V.S., Waterford.

(*Continued from p.* 668.)

We now pass on to the ears, to see if warty excrescences are to be found in the conchæ, and onward to the poll; to ascertain if any disease exists there. Poll-evil is a long time becoming matured. I have seen horses with tumefied polls pass as sound animals because the integument was entire

and the tumour of very small size and deep seated. But there was an evident increase of temperature of the part, added to which the animal was very tenacious of being handled about the head, more particularly at that part where poll-evil is situated. One should always look carefully at the seat of this affection, especially when the animals evince a dislike to pressure of the skin. Although no practitioner could state positively that poll-evil would be seen in any *definite* time, he may call the attention of the purchaser to the appearance of the part, and express an opinion accordingly; which will, I think, be as far as he will be justified in going.

We now proceed to the jugular veins, to ascertain if they are sound. If a vein is absent or impervious, it will not be advisable to let it pass without especial mention. Loss of jugular vein, as well as the former disease, is of necessity unsoundness. It is usual about this stage to pinch the throat, so as to cough the animal—remarks upon which will be made in their proper place. The withers will next arrest our attention. At this part of the examination we sometimes are apt to overlook some minor points, for the reason that all the diseases at this particular part are produced by a misfitting saddle or roller. This seems a sufficient excuse for the seller: and the buyer will, as a general rule, accept the explanation; that is to say, he effects the purchase. We should, however, remove from ourselves the chance of blame, by giving an opinion in a candid manner as to the state of the part; together with the probability of its being placed under treatment at some not far distant date.

The muscles of the shoulder will require a little looking at. We occasionally meet with horses with loss of substance between the withers and point of the shoulder. I have seen some horses whose spinatæ muscles were almost entirely absorbed. The most interesting case I ever witnessed was that of a mare which had been purchased by a gentleman? dealer, and brought to Waterford on her way to London. I had an opportunity of not only seeing the case in its originally wasted condition, but I saw the necessary operation for cure performed, and also the result of that operation, so far as a few hours were concerned. The man who owned the mare accosted me thus: "I say, doctor; can you cure this mare?" My reply was to the effect that I could not. "Well," says he, "I can! in about five minutes." "Oh!" I replied, "so could I in the way you refer to; but I don't call that a *cure*." He inquired what I meant. I made motions with my mouth—as if to blow through a quill. "Ah!" said he, "that's *jest* it." He procured a small knife, a quill, and

a needle and thread, set to work, and produced as nice a formed shoulder as could be moulded; and like the one on the opposite side. I inquired how he managed these things, when he informed me that upon arriving in London he should remove the stitches, and in about forty-eight hours the air would commence to make its escape (after he had parted with the animal of course). He declared he never was detected in this trick. I am of opinion that this man is as "*knowing*" a dealer as travels to London with horses. I have often wondered how he gets rid of such brutes as are taken by him across the channel. Some of his purchases are blind, broken-winded, roarers, bad-tempered, vicious kickers in harness, and, in short, many of the horses possess everything calculated to constitute a bad bargain. The men who carry on this trade (there are many engaged in it) make it a good thing. They each take over from twelve to twenty horses every week or ten days. They are conveyed from Limerick, Tipperary, and Waterford, at cheap rates; say about twenty-five shillings each horse from the former place to London direct. They are packed like sheep, from ten to twelve in a cattle truck upon the *rails*, and they are taken to a well-known place, where they are disposed of at the hammer, without any reserve whatever. This enables the dealer to complete his business early, and be in Ireland again within a week or so. Now and then some useful and sound horses may be picked up from these men. It is, however, highly necessary that every person anxious to purchase of these worthies should have both eyes open. By moving the integument with the hand once up and down will set the matter at rest, so far as the above trick is concerned. In directing your eyes downward you will discern if any disease be present in the elbow. Pursuing our course towards the carpus, we shall have to be somewhat more cautious than we have been perhaps. During this glance, we will, of course, take a peep at the pectoral muscles between the arms, in order to ascertain if a rowel or seton has been inserted there. If all these parts are passed as right, we shall now scrutinise rather closely the knee, leg, and foot. It is necessary to be particular in the examination of the carpal joint, especially in hunters, and for this reason: should a blemish be present upon the knee, which renders that joint in any way defective or stiff, it will be desirable to dwell a little, and ascertain the extent of injury inflicted. This is learned in two or three ways: first, by manipulating the skin in front of the joint laterally; secondly, by moving the skin once or twice upwards and downwards, and, lastly, by flexing the limb—*videlicet*, by hold-

ing the foot towards the elbow; if the point of the toe cannot be placed so as to touch the olecranon, it must be inferred that some derangement has taken place in the carpus, or lower joints, and this will require some nice manipulation—*in some cases*—so as to form a correct opinion. Presuming the carpus is the seat of derangement; we must hesitate in pronouncing the part sound until we have satisfied ourselves that the horse is capable of undergoing *all* the work he will be called upon to perform. When we take into consideration the circumstances which occur in the hunting field, more especially in a *wall-country*, it will be at once apparent how necessary it is that a horse should have free use of the carpal joints. It is of less moment in a *bank-country*, as the style of jumping is different to that of the former. I allude to a five feet wall, or even less. We will suppose a case: A horse is brought for examination with a blemished knee; we find that the toe of the foot cannot be got near the elbow—say from four to six inches—unless great force is employed, and we are certain the stiffness is situated in the knee-joint. We have to take into consideration the fact of the horse being a *hunter*, and likely to be put to a high leap, either stone or timber, no matter which; the rider has no fear of the jump himself, as he has had ample opportunities of testing the capabilities of his horse over all kinds of fences up to a *certain height;* he puts him at a four foot rail or wall, believing the animal can do it well (and so he can with the sound limb; but how fares it with the stiff one?) The horse is unable to flex the leg sufficiently—*an inch short is enough*—the result is a *cropper*, which may possibly cause some serious injury to the rider, perhaps even to break his neck; and all this produced by the defective state of the carpal joint of his horse.

I have deemed it advisable to dwell a little upon this part of the subject, trifling as it may appear at the first glance, having more than once known an awkward fall from knees of this kind. Up to the present time I am unaware of the real cause having been mentioned. I believe there are more *rolls* over a wall or timber country to be explained in this manner than credit is given, and we ought to be very precise in our observations upon the lower limbs of hunters and roadsters. I have never hesitated to reject an animal with such a defect as that I have attempted to describe.

(To be continued.)

HORSE WARRANTY.—A RIG.

By R. H. Dyer, M.R.C.V.S., Waterford.

Sir,—Your correspondent "A." requests to ascertain if any legal decision has taken place upon the above subject; if so, to give the same with references. All I can say is, I have searched every work upon my shelves and am unable to find any such case.

Perhaps a few remarks upon the wording of the form of warranty received by the purchaser may not be out of place.

"A. sold to B. a horse with the following warranty:—

B—. *Nov.* 5, 1862.

"Received of Mr. B. L—, for a brown horse, three years old, warranted sound."

Signed A.

This is a copy of the form of warranty. Now let us consider how far that warranty hss been invalidated. Before we do so, it will be necessary to understand what we mean by the word "*horse.*" In racing language, and in hunting phraseology, a horse means an *entire* animal. This meaning is accepted by all horse people; if, therefore, a horse is to be considered *sound,* he should be *entire.* But it has been the custom for centuries to emasculate animals for the purpose of rendering them more subservient to the uses of man—his master; and it has been found convenient to do this, and to consider an animal so operated upon as a sound one, as regards this part of his economy. To decide the question as to whether a "Rig" is an unsound animal or not, we may feel a difficulty, for this reason, it may be a matter of opinion with one even learned in the law, to hold that a "Rig" is an unsound horse, and, on the other hand, it may be argued, he is *sound.* I think it is just one of those cases where diversity of opinions will be found. I am of opinion the wording of the warranty is *defective,* and that the purchaser has no right to complain. It will be argued, I have no doubt, that a Rig is *not a horse* in one sense of the term; at the same time it must be acknowledged that he approaches nearer to what a perfect horse should be than a gelding. The warranty should have stated the horse or animal was a *gelding;* then, and then only, would the purchaser have made out a case for decision; for the horse *is a horse* in the ordinary acceptation of the word, and in the ordinary mode of speaking by most

individuals. A gelding also is called a horse. Were I to sit on a jury to decide such a question, I should most certainly be of opinion that the horse was *sound*.

The argument in favour of rejecting a Rig as unsound cannot hold good; if the horse, as the purchaser has stated, is of much less service than "if otherwise," it would come under the denomination of "vice." It has nothing whatever to do with the soundness of any animal; therefore the horse must be considered sound. The form of warranty being defective, the purchaser has no remedy. However, as I have before stated, it is a matter which will, as in most *horse cases*, give rise to different opinions.

ON THE ALSIKE CLOVER.

By Alfred J. Shorten, M.R.C.V.S., Newcastle-on-Tyne.

Mr. Watson, of Rugby, having asked for some further information respecting the action of Alsike clover upon horses, and "Mentor" having suggested in his letter that veterinary surgeons, should "*write for*" as well as *read* the *Veterinarian*, I have therefore — albeit but an indifferent scribe—ventured to send you the following account of some cases that occurred in my practice some two or three years ago, when residing in Suffolk. A chesnut gelding, of a light colour, aged, and of the cart breed, was sent to my place one evening suffering from considerable tumefaction of the lips and nostrils, which quite incapacitated him from feeding. On examining him, I found the cuticle of the swollen parts to be peeling off in large flakes, causing desquamation of almost the entire surface of the buccal membrane, as far as I had the opportunity of seeing it; there was much fever present, pulse about 60; the Schneiderian and conjunctival membranes were *intensely yellow*, and a slight swelling with great lameness of the off hind leg, which was a white one, was evinced, the limbs being excessively painful and tender when pressed.

I at the time considered it a case of derangement of the liver and digestive organs, and treated it accordingly.

The following morning, on visiting my patient, I found him generally better; but the lameness had increased so much that the horse could scarcely move; and when made to do so, he lifted the limb with a spasmodic jerk, and kept it suspended for some seconds before venturing to put it to

ground again. There was an ichorous discharge issuing from the skin of the heel, and I may as well here state, that in the course of a few days, it presented all the characters of a case of most inveterate grease, which for a long time resisted all treatment, and was a source of great trouble before it was overcome; but it did at length yield, and the animal bec me quite well.

While attending to this patient, the horse-keeper reported that a five years' old, dark-coloured bay mare was attacked in the same way, and, on inspection, I found the same symptoms presenting themselves. The swelling of the lips and nose was, however, much greater than in the case of the horse, but the limbs were in no way affected. The groom also reported that two or three of the other horses, then at plough, did not feed well that morning; I therefore examined them, and found they had all more or less desquamation of the lining membrane of the mouth, and some little excoriation of the cuticle of the lips. I now, of course, inquired what food they were allowed, and was informed they were being turned out in a clover ley; and on proceeding to inspect it, I was of opinion that it was Alsike clover; and on asking the owner if I were right in my conjecture, he said I was, and that it was the first time he had grown it. I now remembered having read, a few years previously, a report in the *Veterinary Record*, of some similar cases that occurred in the practice of Mr. E. Taylor, V.S., Bury St. Edmunds, and I came to the conclusion that my patients, like his, were suffering from having fed upon this hybrid grass; consequently, I directed that they should not be again allowed to partake of it; and my request being complied with, no more cases occurred; although there were some three or four other horses that had not as then shown any symptoms of being affected by it.

I may mention that sheep, cattle, and pigs were also feeding in the same field, none of which, however, appeared to suffer from it. I regret that I can throw no light upon the portion of the grass in which the deleterious properties reside, nor whether they are developed at any particular period of its growth; but at the time I examined the field, I found that the flowers of the plants in question were just beginning to show signs of forming seed. A period, botanists tell us, when the active principles of a plant are concentrated in it.

In conclusion, I will add to this somewhat lengthy article, that my impression is that both my patients and Mr. Wheeler's, as described by him in the October number of this Journal, were certainly affected by eating of this grass;

and although "Mentor" (who has my thanks for his very sensible letter) may attribute the disease to *change* of food, I am decidedly of opinion that it arose from the change having been made to the "Alsike clover," on which my patients had been feeding about a week before they were attacked.

EXTENSIVE WOUND IN THE PARIETES OF THE ABDOMEN OF A HORSE.

By Mr. James Anderton, M.R.C.V.S., Burnley.

Dear Sir,—On the 12th of August, 1863, I was requested to see a horse, the property of W. Smith, Esq., which was said to have received an injury some time during the previous night, by a cow "goring" its side with her horn. Mr. T. F. Foulding, M.R.C.V.S., being with me at the time, accompanied me to see the case, and also kindly offered me his assistance, which I gladly availed myself of. On examining the horse, I found that he had a large wound on the left side, about eight inches in length; taking an oblique direction from below upwards and backwards, laying bare a part of the sternum, and three or four of the costal cartilages. It extended quite through into the abdomen, thus allowing a part of the colon and omentum to protrude. I at once informed the owner that the recovery of the horse was doubtful, as peritonitis might supervene.

The treatment I adopted was simple. I first closed the wound by strong sutures, and afterwards applied a compress by means of wide surcingle; some laxative medicine was given, and such other antiphlogistic treatment resorted to as was thought necessary to prevent undue inflammatory action taking place. In the usual time the wound suppurated, and granulations rapidly formed, which soon closed the wound, without an unfavorable circumstance having taken place.

The above case is not remarkable in any particular point of view; nor was there any novelty in the treatment adopted by me; yet I think it is illustrative of what extensive injuries important structures may receive (in this instance the peritoneum), and yet ultimately do well. It is on this account I have thought it might be worthy of a place in the *Veterinarian*.

To Professor Varnell.

REMARKS ON THE FOREGOING CASE BY PROFESSOR VARNELL.

The foregoing case may appear to some persons not to possess much that is worthy of notice. I am inclined, however, to think otherwise. To my mind it is, as Mr. Anderton observes, illustrative of what important tissues and organs may be injured and yet recover. It also shows, in a very marked degree, the advantages of the common sense mode of treatment adopted in this case, with a view to induce the healing process over that usually resorted to by the ignorant pretender.

In this instance we had no cramming the wound with *bundles of tow;* no *stinking oils* or *greasy unguents* used to dress the wound with; but such simple means as are best suited to assist nature in repairing the breach made in the abdominal parietes. Had a less favorable course been adopted, or the wound left to itself altogether, the chances are that the horse would have died from peritonitis; and if this had been the case, an elaborate account might have been given of a long list of symptoms presented over which science had no control, confirmed by an equally long one of the *post mortem* appearances, and I might add, in reference also to the symptoms over which nature never had a chance, in consequence of her own curative laws being frustrated by ignorant interference. This, as we have already stated, was not the case in this instance. The wound received a simple, but yet consistent, and as shown by the sequel, efficient treatment, thus reducing that which, to the common observer, might have been considered a very formidable wound, into a very simple affair indeed.

TROOP HORSES BITTEN BY A RABID DOG.

By "Argus."

On Sunday, the 14th June last, it was reported to me that two troop horses had been attacked and bitten by a mad dog. I at once went to the stables, and saw the horses. One had been bitten in two places, inside and outside the arm of the off fore leg. The other in one place only, on the outside of the near knee.

The farrier sergeant saw the animals about ten minutes after the attack of the dog, and had applied nitrate of silver pretty freely to the wounds. I had both horses thrown down, and then by passing a tenaculum through the lips of each wound, and raising it a little, I excised a circular piece of skin with its subjacent areolar tissue, each piece having the bite for its centre, with a margin of about a quarter of an inch of sound skin surrounding it. After allowing the wounds thus made to bleed a little, I had them sponged, and applied the nitrate of silver freely a second time. The horses were then tied up and placed under observation, the sores being treated as ordinary ones.

It is now upwards of three months since the above took place. The wounds have healed, and I sent the animals to their work a month ago. They have shown no symptom of illness of any kind at any time since the accident. As the average time of incubation in the human subject is about a month, I imagine we may now look upon these horses as not likely to be attacked with hydrophobia. There is a *possibility* of its making its appearance, still only a very slight one. Should anything occur of the kind I will let you know, for you may presume I take no ordinary interest in the cases.

I saw the dog that had bitten the horses. It had been pursued and beaten to death with latties (long sticks), by a number of Syces *after* biting the horses. It had not been bullied or chased previously. Its attack on the horses was quite an unprovoked one. The dog was a wild pariah. From its appearance, and from the description given to me of its conduct when alive, I have little doubt, in fact none, about its having been rabid. It had run at a rapid pace right through the middle of the troop stables (which in India are open ones), never stopping until it came into collision with these two horses. Two rabid dogs of the same kind had been killed in the barrack square a week before.

I ought to have mentioned, that three quarters of an hour had elapsed between the time the horses were bitten, and that of my cutting out the pieces of skin.

There is nothing extraordinary about these two cases; but as horses are not *very often* bitten by rabid dogs, the few cases of it that do occur are worthy of being placed upon record, I think, and particularly when the means resorted to to prevent hydrophobia appear to have been successful.

FRACTURES OF THE OS SUFFRAGINIS AND OF THE HUMERUS.

By "Phaeton."

Although I cannot class myself with those mentioned in "Mentor's censorious" epistle, "who blow their own trumpets in newspaper puffs," and "bottle up their ideas with a malignant spirit," I must confess that I have both read and profited by your invaluable *Veterinarian*. But while reading its scientific contributions, flashing like so many meteors around me, I have felt that any attempt of mine would be eclipsed, and only serve to make darkness visible. Nevertheless, cheered by Mentor's encouraging words, that although my style of expression may not be elegantly clothed, I am led to hope that a few, not "made cases," but practical facts, may not be unwelcome. Should this prove to be so, I may at a future period again presume upon your pages.

Case 1st, 1856, Sept. 3rd.—I was desired to attend a mare, five miles distant from this place, which had run away, and when attempting to stop in the street suddenly became very lame. Upon examination, I found a transverse fracture of the os suffraginis of the off fore leg.

The mare was seven years old, sixteen hands high, half bred. I ordered her to be placed in a loose box, and not having proper appliances with me, I merely bound the parts up temporarily.

Sept. 4th.—I attended, and applied proper splints, bandages, &c., and ordered that cold water be frequently applied to the injured limb.

Nov. 4th.—Had the mare removed home in a van.

21st.—Removed the bandages and splints. The mare was lame when made to trot; but from this time she continued to improve, and did her usual work until I lost sight of her.

Case 2nd, March 29th, 1858.—A mare, sixteen years old, well bred, and in foal by a thorough-bred horse, was being ridden by a lad, when she ran away, slipped up, and a transverse fracture of the humerus at its middle third was the consequence. A farrier was sent for, who ordered her to be shot (on his part not an unwise precaution), but the owner was very anxious concerning her, and sent for me. I stated to him the nature of the case and its probable results, and the position in which I should be placed should the case not do

well, knowing that there are no persons so apt to ridicule veterinary surgeons as farriers, nor any persons so deserving of it from the latter as themselves; and so it is, as the scale descends, that politeness and even civility decreases. But I am digressing. At the earnest intreaty of the gentleman and his sporting friends, I undertook the case.

The treatment was as follows: I had the animal placed in slings; I then obtained the aid of a saddler, who, by my instructions, made some harness of strong canvas. It consisted of two pieces, which met between the fore legs, and on the top of the withers. At both of these divisions they were padded and laced with a leather thong. The lacings extended from the one extremity of the sternum to the other, and of a corresponding length on top. The canvas reached as far as the middle of the radius downwards on each leg, inside of which it was again laced to meet that upon the sternum. Outside of the canvas, upon the injured shoulder, and placed in the position of the humerus, and over it was a board an inch in thickness, rounded at its ends and sides, and properly secured by an extra sheath of canvas.

I now found that I had perfect power to reduce the fracture *by pressure*, and also that the animal was unable to displace the bones.

She remained in the slings and harness until August 17th, when she was released.

A gentleman afterwards purchased her. In due course she foaled, and £100 was offered for the foal when three years old. The mare is still living, and continues to breed. I frequently see her; the action of the injured limb is a little shorter than that of the other, but her pace is not impeded.

Case 3rd, 1863, May 13th.—A cart mare, four years old, when galloping across a level meadow, fractured the near fore os suffraginis, which fracture I found to be transversely oblique. The treatment was the same as in Case No. 1; and the animal was turned into a barn-mow, where she remained for three weeks, when she was turned out to grass.

August 21st.—Up to this date she has continued to improve. I now removed the greater part of the appliances.

October 5th.—She was shod, and has since continued to work free from inconvenience, although the limb is not quite upright, but she can gallop upon the turf as well as she could before the accident.

PIGS POISONED BY EATING DECAYED VEGETABLES AND SOUR MILK.

By J. Barnett, Veterinary Student, Market Drayton.

On September the 8th I was summoned in great haste to see a number of pigs the property of a nurseryman in this neighbourhood. On arriving at his premises, I found that three four-months-old pigs were dead, and that three others of the same age had retired each into a separate corner of the yard, together with a four-year-old sow, in such a state as to afford but slight hopes of their recovery. The most striking symptoms were sickness, staggering gait, and convulsive movements of the hind extremities. The heart's action was very feeble, and the visible mucous membrane extremely pallid. The entire surface of the skin of the smaller animals was of a dark colour, anything but natural, caused, doubtless, by the highly carbonized state of the blood. In the sow I could not notice the condition of the skin so well, she being a black one. The owner not liking to see the animals die without doing something towards relieving them, had, before my arrival, been unwisely dosing them with salt and water. At first I was inclined to think the salt the cause of all the mischief, but further examination proved this opinion to be untenable. On inquiry, I ascertained that several milch cows were kept, the surplus milk and butter-milk of which had been thrown into a large tub, together with a quantity of turnip tops, cabbage and mangel leaves. I was informed that this mixture had been accumulating for four or five months, under the belief that it would come in useful when the ordinary supply of food fell short. This occurred for the first time on the morning in question, and consequently the pigs were fed with the fatal beverage. They appeared to eat it with great relish; but within half an hour its effects were visible, and in a few minutes afterwards three lay prostrate. A messenger was despatched at once, and I was in attendance in three quarters of an hour after their meal, at the utmost. To administer any supposed antidotes was a matter of impossibility, the power of deglutition being lost before my seeing them. The smaller pigs were immediately immersed in water of about 80°, for from ten minutes to a quarter of an hour, after which I endeavoured to administer Tinct. Opii, Spt. Æth. Nit., et Ol. Lini, but was only partially successful. Ultimately two of the smaller ones recovered, the remainder dying in my presence.

I immediately commenced an autopsy, and the morbid appearances being the same in each case, I will describe those of the sow. The stomach, with a small portion of the duodenum, contained marked signs of acute inflammation; the villous coat was considerably thickened, and of a rusty yellow colour. The eroded and ulcerated patches characteristic of mineral poison were nowhere visible. All the other viscera were healthy, with the exception of their having a darker appearance than usual; especially was this the case with the liver. The blood throughout was of a deep lake colour, and coagulated immediately on exposure to the atmosphere; both the auricles and ventricles of the heart were empty. The alimentary canal contained a good deal of partially decayed vegetable matter, suspended in a watery fluid possessing a most acid smell. The animals being in the immediate vicinity of a shrubbery and flower-garden, made me more particular than I should otherwise have been in searching for any specimens of Solanaceæ or other poisonous plants, but I failed to discover anything of the kind. The only conclusion I could therefore arrive at was, that death had been caused by the casein of the milk, through long exposure to atmospheric influence, becoming converted into lactic acid and alcohol, which, together with sulphuretted hydrogen derived from the decomposing vegetables, had formed the poisonous mixture.

It is somewhat strange that the same person should have lost a litter of pigs a few years since in a rather unaccountable manner. I understand they had been eating the remains of a cow that had previously been largely dosed with nitre. Since this time a vegetable diet has been given to the pigs.

A SECOND COMMUNICATION,

From Mr. Barnett.

In the communication I sent you a short time since, regarding an unusual fatality amongst some pigs, it was stated that two had recovered. I will now give you a few more particulars concerning these animals. I gave directions at the time for careful hygienic treatment to be observed, which, however, was very far from being attended to, for on the seventh day after their first attack they were allowed decayed turnips *ad libitum*. The consequence was that, on the next day, I received a message

that another pig was past recovery; and considering that I had taken an interest in the former cases, the owner thought I should perhaps like to make a *post-mortem examination* of this one. I attended at once, and found the animal dead, lying on its abdomen, with both the fore and hind legs outstretched. The belly also was greatly distended. Being much engaged at the time, I could not stay to make an autopsy, and therefore deferred it until the next morning.

After making a longitudinal incision into the abdominal cavity, and a small opening into the cæcum, I drew back to avoid the effluvia I expected to escape, but I was soon undeceived; for instead of gas, I had given vent to full three pints of straw-coloured and transparent urine, which had flowed through a rupture of the coats of the bladder. The urine gave, on examination, a marked acid reaction; but it possessed no other peculiarity that I could discover. The muscular structure of the bladder was thrice its natural thickness, and the mucous coat was reddened, and appeared to be one mass of minute ulcers. The rupture was of a circular shape, with ragged edges, about the size of a sixpence, and situated at the extremity of the bladder furthest from its attachment. The ureters and the prostatic portion of the urethra were larger in calibre than natural, and, as well as the medullary portion of the kidneys, were somewhat reddened. The lungs and spleen were hepatized, and interspersed with scarlet patches of congestion. I was particular in searching for any traces of the late poisoning. The rusty-yellow colour of the pyloric orifice of the stomach, so peculiar in the other animals, was faintly visible. The villous coat was thickened, but not to the extent seen in the former cases. The mucous coat, throughout the entire length of the digestive tube, was extremely thin, and appeared in several places to have disunited itself from the muscular.

The other pig is well, and in fine condition.

Facts and Observations.

HYDROPHOBIA.—The Minister of Agriculture and Commerce in France has addressed a circular to all the prefects, requesting them to furnish the Committee of Public Salubrity with every information necessary for the general inquiry into canine madness, which has been going on since 1850. The veterinary schools are also directed to draw up statistical accounts of all the cases which come under their notice, with every particular connected with them. The circular, moreover, proposes to establish in each department a special infirmary, where animals which have been bitten can be confined, and the effects of the bite closely watched.

DETERMINING THE SEX IN BREEDING OF CATTLE.—Professor Thury, of Geneva, has enunciated a law, which has been confirmed by M. Cornaz, that sex depends on the degree of maturation of the egg at the moment of fecundation. In uniparous animals, fecundation at the commencement of the rutting period gives females, at its termination males. In multiparous creatures, the first eggs that descend from the ovary generally give females, the last males. But M. Thury says, that in a second generative period that succeeds the first, the circumstances are changed, and the last eggs give females.

M. Cornaz, carrying out this method, states that in twenty-two successive cases, females were obtained, according to his desire. The animals bred from were Swiss cows and a Durham bull. Having purchased a Durham cow he desired to obtain by breeding a Durham bull, and he succeeded. He also desired to breed six bulls, crossed between the Durham and the Swiss, and by selecting cows of the colour and height he wanted, he was again successful. He therefore regards Professor Thury's method as of the highest importance to breeders of cattle.

PRESERVATIVE PRINCIPLE OF COAL TAR.—M. Rottier asserts that the principle in coal-tar, which gives to it the power of resisting the decay of wood, is a green oil, obtained by distillation at a temperature of about 572 F. The other compounds contained in coal-tar do not possess the like preservative properties.

CONSTITUTION OF OZONE.—M. Soret confirms the

hypothesis of Dr. Andrews that a molecule of ozone is composed of several atoms of oxygen. He supposes that one molecule of ozone is made up of three atoms of oxygen, constituting a binoxide of oxygen. In the formation, two atoms already united to form a molecule of free oxygen, representing two volumes, combine with another atom representing one volume to make a molecule of ozone, representing two volumes.

His hypothesis will explain the oxidising properties of ozone, and the constancy of volume when treated with oxidisable bodies, as well as the expansion under the influence of heat, and the contraction oxygen undergoes by the action of electricity.

Test for Ozone.—Strips of paper moistened with pyrogallic acid become brown on being exposed to the action of ozone.

A New Metal.—Messrs. Reich and Richten announce the discovery of a new metal by them, to which they have given the name of *Indium*, on account of its giving an indigo-blue line in the spectroscope. It was obtained by them from two Frieberg ores, and at first suspected to be thallium; no green line, however, was seen, but instead thereof a brilliant, sharp, and persistent blue line; the inference, therefore, was, it belonged to a hitherto unrecognised metal.

Nerve Cells.—Mr. Lionel Beale's researches lead to the conclusion—1. That in all cases nerve fibres are in bodily connection with the cell or cells which influence them, and this from the earliest period of their formation. 2. That there are no apolar cells, and no unipolar cells in any part of any nervous system. 3. That every nerve cell, central or peripheral, has at least two fibres connected with it.

Titanium in Iron.—Mr. E. Riley makes known a fact which appears not to be generally known, namely, that titanium exists in pig iron, and especially in the soft hæmatite ores. Its presence is an advantage, as it gives to iron the character of steel. This has been long noticed in the hæmatite and Forest of Dean ores, which are so valuable in the market, although the cause of their superior quality had not been before ascertained.

Formation of Nitrite of Ammonia.—M. Schöenbein states that if into a platinum capsule heated so high

that water on being dropped into it passes off in the state of vapour without assuming the spheroidal form, water be slowly dropped, each drop being allowed to evaporate before another passes in, and over the capsule a vessel be inverted by which the vapour may be condensed, it will be found on examination to contain an appreciable quantity of nitrite of ammonia. The combustion of some substances also furnish the same salt, which M. Schöenbein refers not to the act of combustion itself, but to the concurrence of heat, water and air. In this way he accounts for the presence of nitrite of ammonia in rain-water; and as the evaporation of water is taking place at all times and in all places, so this salt should be found everywhere. By the same theory, he explains the formation of nitrites in the soil; the presence of nitrogenized matters there not being, he asserts, a *sine quá non* of nitrification, a proof of which is that the soil of Bengal contains them not.

Digestion.—Mr. Brücke, of Vienna (*Constatt's J. de Pharmacie*) has communicated to the Austrian Academy of Science an interesting paper on the influence of acids and pepsin in digestion, and on the question whether the latter is formed during that process; and also, in what manner the secretion of the digestive fluid takes place. By pepsin, Brücke understands the nondescript substance emanating from the glands of the stomach, and which, in an acid solution, has the power of dissolving all albuminous matter within the stomach as well as without it. He found by a number of careful experiments that this power is strongest in a solution of $\frac{7}{8}$ths gramme of dry hydrochloric acid in a litre of water, decreasing when the amount of acid rose above $\frac{1}{3}$rd, or fell below $\frac{9}{20}$ths of a gramme. Contrary to the generally accepted views of Mulder, that part of the albuminous matter may pass into pepsin, Brücke's experiments go to show that such is not the case. He concludes that the stomach in an empty condition contains no acid fluid, which is only secreted by the action of the nervous system when food is introduced. Dr. Ebstein (*ibid.*) communicates a series of experiments on the action of saliva upon starch. Like Leuchs, Frerichs, and others, he found that starch, in contact with saliva, even in the presence of some acid, to a certain extent is converted into dextrin and sugar, and that the secretions of the stomach, though of an acid reaction, do not prevent this change. Dr. Ebstein remarks, that while secreting the saliva necessary for his experiments, he found it advisable to abstain from smoking, which, we suppose, he otherwise

considers a legitimate occupation during physiological experiments; he does not, however, suggest the same caution in regard to chewing.—*Chemical News.*

Curious Medical Facts.—Dr. Kidd says it is a curious thing that life among the Arabs is of a more healthy kind than the life of the selfsame Arabs brought into town (even the Spahis in Paris got sick lately till encamped along with their horses and cows), and the reason has only leaked out gradually. Such Arabs have no disease like measles or smallpox that, amongst the Chinese to wit, either renders blind or kills 30 per cent. of the population. The Arabs lie asleep with their horses and oxen. The "grease," a peculiar disease of horses, gives cowpox to the cows, and this latter saves the Arab children from smallpox. Measles is another disease, as well as consumption, that they escape. Some striking facts go to show that measles arise from feathers and straw used in nurseries for children. Seventy per cent. of the cases spread and arise by infection, so this the Arabs escape. Consumption again is a disease unknown amongst Arabs, living in the open air; it is a disease as certainly arising from bad ventilation in close rooms as that the sun rises in the East, or that our Irish workhouses are nurseries of this fell disease. It is now believed that tobacco is less injurious to the world than sugar, as the latter is the root of a series of diseases ending in rheumatism and diseased heart.

Estimation of Sugar in Beer.—By means of the dialyser of Mr. Graham, the quantity of saccharine matter in beer may be ascertained. For this purpose, a certain quantity of beer is introduced into the dialyser, and in a few days all the sugar will be found in the external liquid, separated from the gummy and other principles.

New Green Pigment.—Of all colours, green seems to be most agreeable to the human eye. But since the justly denounced use of the arsenite of copper, this colour has been only rarely employed for wall papers, &c. M. Plessy states that a chrome-green may be obtained by dissolving one part of bichromate of potash in 10 parts of boiling water, adding to this three litres of biphosphate of lime, and then 1·250 kilogrammes of brown sugar. The precipitate, he says, contains no poisonous substance, is unalterable in the sun, and sulphuretted hydrogen and acids do not act on it. Moreover, it may be used either as a water or oil-colour.

THE VETERINARIAN, DECEMBER 1, 1863.

Ne quid falsi dicere audeat, ne quid veri non audeat.—Cicero.

ON SOME OF THE FUNCTIONS OF THE SKIN.

The skin ranks among the great organs of the body, and belongs especially to that group which are called emunctory, or in other words, the cleansers or purifiers of the blood. The skin, the liver, and kidneys, are sometimes called the scavengers of the body. But the skin, as a rule, is weakened in its powers by bad management, and throws an additional degree of labour on its scavenger companions, which leads to their deterioration and disease.

But the skin is not an emunctory or purifier only. Besides its vast system of draining tubes which open on the surface by seven millions of pores, and which, we are told by Mr. Erasmus Wilson, in actual measurement would stretch over nearly thirty miles if laid end to end, it has the power of drawing from the blood certain organic elements in the fluid state, and converting them into solid organic formations, known as cells and scales,—these cells and scales being the tesselated mosaic with which the skin is finished on the surface, so as to render it capable of existence in the atmosphere of the external world. Besides this, the skin is converted into a kind of sponge by the myriads of blood-vessels which enter into its structure—blood-vessels that many times in an hour bring every drop of the blood of the body to the surface, in order that it may furnish the materials for the microscopic pavement; that it may be purified by the abstraction of its unwholesome principles, and may breathe the vital air of the atmosphere without. Besides this also, the skin near its surface is one vast network of nerves,—nerves, mysterious organs that belong in their nature to the unknown sources of the lightning, the electric currents of the universe.

The power possessed by the skin of resisting the effects

of extreme degrees of heat and cold is well known. The experiment performed by Dr. Fordyce on Sir Joseph Banks, and Sir James Blagden, well illustrates the first named. The Doctor prepared an apartment, which he gradually heated to the temperature of 264° Fahr., or 52° hotter than boiling water. Into this the two valiant knights entered, and remained in it till, as we are informed, eggs were roasted, and a rump-steak cooked; yet they themselves experienced but little inconvenience. Still higher temperatures than this have been, and constantly are, resisted by artisans in drying and other furnaces, also in smelting-works, &c. Lately the Earl of Shaftesbury told his assembled peers, of children of "tender years" being constantly employed in stoves, or ovens, in Staffordshire pottery works, twelve feet square, and from eight to twelve feet high, in one of which the thermometer stood at 126°, in another at 130°, and in a third at 148°. Surely here was enough to test the powers of resistance; but how often is this at the expense, if not of life, at least of health, while the moral and physical effects are to the helpless workers in such places most ruinous.

Of the latter—extreme degrees of cold—the Arctic voyagers, perhaps, afford the most striking and interesting proofs. Dr. Kane, of the U.S. navy, when at the head of Smith's Sound, North America, in 1851, ascertained the temperature to be 70° below zero. Chloric ether, he states, froze, and fifty-seven dogs perished, with symptoms resembling hydrophobia. Captain McClure, the discoverer of the north-west passage, in the winter of 1852-3, which he describes as "terrible," found the average temperature to be 44° below zero; and on one occasion it was 65°. Nor are the recent balloon ascents by Mr. Glaisher without interest in this respect. He says, when four and a half miles high, the temperature was just zero of Fahrenheit's scale. On descending, his companion, Mr. Coxwell, forgetful of the fact that the grapnell had been exposed to this temperature, took hold of it with his naked hands, and cried out as in pain, that he was scalded; the sensation being exactly that produced by scalding water.

The Turkish bath is said, by Mr. Erasmus Wilson, to have the property of hardening and fortifying the skin, so as to render it almost unsusceptible of the influence of cold. The feeling, he states, after quitting the 'Calidanium,' is one of the defiance of cold; the bather has a longing for the cool air of the outer world, and with no other covering than his cotton mantle, a lawn or a terrace would be his chosen resort, if the opportunity were within his reach. In the hands of Mr. Urquhart, the bath has presented us with one remarkable instance of the power of endurance of the skin as developed by its aid. An athletic child, of five years old, had been brought up in the bath, and never worn other clothes than a loose linen garment. It is stated he was a fine sturdy fellow, with the independence and deportment of an Indian, and the symmetry of an Apollo. He was met one wintry day, when the snow was on the ground, walking in the garden, perfectly naked. "Do you feel cold?" inquired his interlocutor. "Cold!" said the boy, touching his skin doubtfully with his finger, "yes, I think I do feel cold." That is, he felt cold to his outward touch, but not to his inward sensations, and it required that he should pass his finger over the surface of his body as he would have done over a marble statue to be sure, not that he was cold, for that he was not, but to be convinced that his surface felt cold.

That the skin of man can support the temperature of a climate such as that of Britain, when trained to it from the cradle, is perfectly clear; our forefathers, the ancient Britons, wore no clothes. The Roman invaders of Britain tell us of the "naked savages of Scotland." The inhabitants of the Tierra del Fuego, at Cape Horn, a country colder than Britain, have no other clothing than a hide which they hang on their windward shoulder; and their children may be seen, perfectly naked, gambolling on the sea-shore, and scrambling in the bottoms of the boats that come off to the passing ships. The mother of the little Apollo I have already described called the attention of a friend to the warmth of her infant's feet, and with the remark, "While my old nurse was with me, the child's feet

were always cold, because she insisted upon covering them up with socks; but now that I leave them exposed to the air they are constantly warm."

It has been well observed by Mr. Wilson, that the function of the skin is also that of a breathing organ and a transmitter of oxygen, in which the blood is the principal agent engaged, and the degree of absorption of oxygen will be determined by the freedom and abundance of circulation through the capillaries of the skin. Now, one of the first effects of a high thermal temperature is to augment the circulation of arterial blood through the skin, to carry the arterial stream into capillaries that have long been inactive, and to bring the circulating blood nearer to the periphery and nearer to the oxygenising element. Therefore the use of the thermæ must tend directly to the oxygenisation of the blood and to the perfection of those nutritive and vital processes that are due to the appropriation of oxygen. The lungs, which are the great oxydisers of the blood, are in structure very little different from the skin, the differences between them being more those of position than organisation; the mucous membrane of the lungs is an inverted skin, while the skin may be regarded as an everted lung.

The same author, speaking of the training capabilities of the Turkish bath, says:

"In employing the bath as a means of training, we must have clearly before us the powers of the bath, on the one hand, and the precise objects which we wish to attain, on the other. The bath will abstract the old material from the system, and will thereby render the system more ready to take up and more capable of appropriating new and strengthening nutritious matter which may be given to supply its place. In other words, it will do the sweating part of the process excellently, without fatigue, without wear and tear to the economy. But this, although a necessary part of the process of training, is only a part of the process. Other means are required to direct the new nutritive matter to the organs which especially require it, the organs of locomotion, and the principal of these means is exercise. The racehorse must still have his muscles trained by exercise; the prize-fighter, prize-runner, or prize-rower, must still pursue a systematic course of exercise; but the exercise in both instances is only that which is required to educate the muscles,

to give them power, precision, facility of action, and to strengthen the breathing function; the exercise for the abstraction of unnecessary matter, for the removal of fat, is no longer requisite; for that the bath will amply and sufficiently provide."

Mr. Wilson has likewise shown, in his paper on the "Treatment of Disease by Immersion of the Body in Heated Air," published in the *British Medical Journal*, how we can so far excite the emunctory power of the skin as to make it the means of carrying off the elements together oftentimes with the seeds of disease. Of this he adduces two illustrative proofs, as follows:

"1. *Adaptation of the bath to the preservation of the health of the horse.*

"My friend G., who has had much and the best kind of experience in the management of horses, tells me that for more than twenty-five years he has been in the habit of having his horses washed whenever they returned to the stable in a state of perspiration, and with the result that his stable was remarkable for the health and condition of the animals. His process was as follows:—The horses were thoroughly sponged over with warm water; then with tepid water; and, lastly, with cold; the water was then scraped out of their coats with a scraper, (*strigillum*), and they were well wiped down with a leather. After this they were covered with a cotton sheet, and their legs were bandaged with cotton rollers. In fifteen or twenty minutes the sheet was raised gradually, first at one corner, then at another, until it was completely removed; the uncovered portion being thoroughly wiped before the next was proceeded with, and the process being continued until the animal was completely dry. After this treatment, there was no fear of any subsequent *breaking out*, and however sharply the horses had been worked, frequently after a run of ten miles in half an hour, they were ready and willing for a double feed of oats.

"How different this picture from that of the common condition of horses under similar circumstances; breaking out into a profuse and often a succession of profuse perspirations after being put into the stable, and unable to eat their corn from faintness and exhaustion."

"2. *Ventilation of the skin of the horse.*

"The importance of *ventilating the skin* is illustrated in the process of clipping and singeing, as applied to the horse. The thickening and lengthening of the coat of the horse in the autumn season is a change obviously adapted to prepare him for the coming severity of the winter; and however natural to the animal in his wild state, is ill suited to his condition as the useful and obedient servant of man. As autumn advances, and after a few cold days, the coat of the horse appears as if 'broken up' into plots, and the individual hairs stand out roughly, or in technical language, the coat 'stares.' Accompanying this change in the appearance of the skin, the animal becomes weak and languid, loses his spirit, breaks out into sudden and abundant perspirations upon slight exercise, and shows himself unequal to his work. Now, the ready remedy for this state of things is the removal of the excess of hair, and the exposure of the skin to the action of the atmosphere. If the coat be clipped close to the skin, or singed, or better still, be shaven, the animal preserves his strength and vigour, and is equal to all the labour that may reasonably be imposed upon him. Of the three processes, shaving is the best, then clipping, and lastly singeing. As to the latter, it is not quite clear whether its inferior position in rank to the others is due to the less complete exposure of the skin to the action of the air, or to the sealing of the ends of the hair by the act of burning. It is not improbable that the cut ends of the hair in shaving and clipping may serve as breathing pores for the inhalation of air; an advantage to the oxygenisation of the circulation in the skin that is lost by the contraction and obliteration of the cells of the hair which ensues after singeing.

Another curious concomitant of clipping is the change in the colour of the coat, a change which seems to indicate that the colour of the hair produced in the winter time is different from that of the summer."

As it respects absorption by the skin, it would seem as if different views were about to be entertained than those once held and taught. M. Parisot, in a communication lately sent by him to the Academy of Science states, that he placed patients in baths containing iodide of potassium, chlorate of potash, prussiate of potash, and sulphate of iron, for a period of one or two hours, and afterwards tested the urine and saliva without discovering a trace of either salt. He also

placed patients in baths containing belladonna, digitalis, and rhubarb, and found no dilatation of the pupil to result from the first-named agent, nor any alteration of the heart's action from the second, and the colouring matter of the third was not detected in the urine.

In a subsequent paper M. Parisot further stated that he had by experiment ascertained, that water is only absorbed into the body at the palms of the hands and soles of the feet. The reason for this, he says, is obvious; these parts are unprovided with sebaceous follicles, the secretion from which forms a protecting varnish for the rest of the skin. Chloroform, alcohol, and ether dissolve the sebaceous matter more or less completely, and hence substances dissolved in them may penetrate to the derma.

Extracts from British and Foreign Journals.

THE IMPROVEMENT OF AGRICULTURAL HORSES SUITED TO THE WEST OF ENGLAND.

By Professor Brown, M.R.C.V.S.

(*Continued from p.* 697.)

II. Breeds adapted to different Localities.

In applying horse-power to the cultivation of the soil and the various kinds of agricultural work, we assume that force in reserve is indispensable, or at least economical. No error can be more disastrous in its results than the employment of animals possessing a muscular development or weight of body inadequate to the performance of the amount or the kind of work for which they are required. Muscular power may act independently of weight; and this, on the other hand, may, to a great extent, supersede the necessity for great muscular force. In all kinds of draught work the weight of the body largely contributes to the animal's power, the muscles being principally occupied in pushing the body forward by the aid of the hind extremities, and counteracting the tendency to fall by advancing the fore limbs as pillars of support: the

combined movement having the effect of advancing the body, and with it whatever objects may be attached, it follows naturally that when the weight of the animal is sufficient to overcome the resistance of the object to be moved, very little muscular force is necessary, but, assuming the weight to be insufficient, a proportionate increase in muscular action is required to produce the same result. The exhaustion which follows this active exertion is detrimental to its continuance, while the almost passive employment of the weight of carcase in draught is attended with trifling expenditure of power.

Great weight presupposes bulk, which is incompatible with speed, and hence animals remarkable for extraordinary powers of draught are inevitably slow. The injurious consequences arising from overtaxing the powers of the horse are quite well understood, and hence the desire for the cultivation of animals possessing a preponderance of the essential qualification. It must not, however, be forgotten that the error in the opposite extreme is not the less absurd, although harmless to the animal. The unnecessary expenditure of power, the slow work on a farm, which could be rapidly cultivated by lighter animals, and the extra expense of purchasing and feeding the larger horses, are all arguments against a system of arrangement which does not take into calculation the amount of force required in relation to the work to be done, admitting at the same time the general truth of the principle that power in excess is beyond all comparison to be preferred to power in deficiency.

There is occasionally much difficulty in deciding upon the particular breed of horse best adapted for the agriculture of any large extent of country, owing to the great variety of its soils and surface-levels; and in the case of small farms, even a difficulty similar in kind, though less in degree, may sometimes be experienced. A light soil upon the oolites, a more tenacious soil of a mixed nature lower down, and an intractable soil upon unmitigated clay, may exist upon the holding, and even be so impartially distributed that the farmer may be puzzled to decide which should most influence his choice of horses. The problem will generally be most satisfactorily solved by recollecting that, while the heavy horse can work the lighter land, the converse of the proposition by no means obtains.

In the West of England, as already shown, the principal soils requiring arable cultivation are upon the chalks, greensand, oolite, and the Kimmeridge and lias clays.

In localities where the lias forms a large part of the cultivated soil, none but powerful animals can be employed with

advantage. In the Vale of Gloucester four sturdy horses are necessary to plough the tenacious land;* one pair abreast of the most powerful even would probably be found anything but economical. Many varieties of the old English horse would be adapted to this locality, as well as to parts of Somerset and Worcestershire upon the same formation; and by careful selection and proper management in crossing, animals of the required size and power might without difficulty be obtained. The SUFFOLK PUNCH is in favour with many farmers, and undoubtedly possesses the qualifications which are indispensable for this heavy agricultural work.

As the tenacious clays become mitigated by artificial treatment, or natural mixture with the débris of the higher limestone rocks, as well as by warps and drifts, the obstinacy of their nature is diminished, and the heaviest horses are no longer required for their cultivation. For such improved soils, and also for the medium lands upon the oolites of Gloucestershire, Wiltshire, and Dorsetshire, the CLYDESDALE seems particularly adapted. Standing between the heaviest and slowest, and the lightest and quickest of draught horses, he possesses all the requisites for cultivating the mixed soils to be met with in these parts; the freedom of action characterising the breed is particularly valuable upon the lighter grounds; and the great comparative power of draught prevents any undue exertion of muscular energy when the breed is used for agricultural operations upon the mitigated clays found in connection with the oolites, as the Kimmeridge, Forest-marble, and portions of the lias rendered workable by cultivation.

Upon the light lands situated on the chalks, and also upon the associated upper oolites, as in Wiltshire for example, and in grazing districts of Devonshire, Somersetshire, and Worcestershire, where the agricultural work is light in kind, the large CLEVELANDS will be employed with advantage; their free action rendering them especially fit for cart-work, and for harrowing and ploughing the lightest soils, while the low price at which really useful animals of this class may be obtained when no longer valuable for the carriage is another very important point in their favour. It is further worthy of remark that, with moderate work, such animals commonly improve upon the farm, and consequently increase in value.

Improvements in the various breeds of agricultural horses

* In many instances very large horses are not liked for strong clay lands; the plough requires three or four, and the nature of the soil renders it desirable that they should walk in a line. The moderate-sized horse does not, as a matter of course, tread the land so much.

we have been considering are unquestionably very greatly and generally needed. A specimen with nothing to be desired may be occasionally met with, but, considering the entire race, we have no lack of abuses to remove and errors to rectify.

Before offering any suggestions for improving the animal's condition, it may be as well to indicate the nature of the defects of which we complain.

It has already been remarked that the cart-horse is the subject of many diseases, some of them (such as glanders, farcy, mange, and surfeit), directly traceable to bad management, poor quality of food, defective ventilation and drainage; some, including diseases of the eyes, thrushes, canker, quittors, sandcracks, to the obvious effect of neglect or injury; others are the consequences of too early or too severe work, and among them may be mentioned bony deposits and bursal enlargements (under the names of windgalls, blood or bog spavins, and thoropins). Two diseases, grease and chapped heels (the former being almost indicative of an admixture of cart-horse blood), are so constant among cart-horses, that we are inclined to suspect a constitutional tendency to them; indeed, the thick hard integument clothing the extremities of the animal is in itself a condition unfavorable to elasticity and free circulation; and when, in addition, that integument is covered with long coarse hair, constantly retaining dust and moisture, we cannot fail to recognise a further reason for such a predisposition as the animal manifests.

The occurrence of spasmodic colic and intestinal inflammation is also frequent, and may be correctly ascribed to the objectionable system of allowing animals immediately after work to drink immoderately at the tank or pond.

The existence of these several diseases, in association with the causes that produce them, rather strengthens the position we advanced to the effect that "the farm-horse ought to be the healthiest animal in existence," as, in fact, all the affections we have enumerated are connected with some remediable error in breeding or management, and could hardly occur if proper precautions were taken to place the animals under the most favorable circumstances.

Means of Improving the Breeds of Agricultural Horses.

Commencing with the parents, the breeder, having determined upon the kind of horse he requires, makes his selec-

tion with a due regard to AGE, CONFORMATION, and SOUNDNESS.

The AGES of the animals employed for stock purposes will vary very considerably, and so long as full vigour is retained we do not care to impose any restrictions.* Breeding from young and immature animals is a practice opposed to all correct principles, but after the adult period is reached it is a matter of comparative indifference how soon afterwards they are employed, or how long they are continued in the capacity of stock-producers within the limit which nature assigns. The appearances consequent upon impaired vigour and general deficiency of vitality are easily recognised, and definitely fix the period at which the animals cease to be valuable, and beyond which they cannot be consistently used; these indications are not apparent at any particular time in the animal's existence, but depend upon original strength of constitution, as well as the character of the treatment to which the horse has been subjected. It is not uncommon for bulls to be used at the age of a year or a little over, and to be entirely worn out in a few years' time, while among horses, some of our thoroughbreds, after a long career upon the turf, are found in full vigour as stock-horses long after twenty.

CONFORMATION will vary in all the varieties of heavy and light draught breeds, but the same type or standard of perfection will be kept in view. A finely-formed, rather small head, clean expansive nostrils, full clear eyes, and broad forehead, will give a head which can scarcely be found fault with. The neck should be moderately short, curving gradually into the chest without any sudden or angular lines; the curve of the back should be little removed from the straight line, particularly if the body be long; the shoulders ought to fall properly back, as in the best-formed horses of other breeds. The arguments we have heard in favour of the straight shoulder for the draught-horse, based on the idea that such conformation gives a tendency to fall forward, and thus assists him in moving the load, would meet with our hearty concurrence if we desired to produce a race with a decided predisposition to broken knees; but, in the absence of such a wish, we cannot advocate so palpable a defect in form. The tendency to fall consequent upon such a peculiarity we do not for a moment doubt, but the advantage of fostering such a tendency we altogether dispute. A proper obliquity of shoulder is favorable to muscular action, and

* It is considered bad policy to select both parents of great age.

hence facilitates the animal's movements, whether in the hunter or the cart-horse; and the conformation which is best adapted to the support of weight and to freedom of action cannot but be the nearest to the perfect type of horse of whatever breed or variety. The chest of the cart-horse should be full and deep, the barrel tolerably round, and what the horseman terms "well ribbed up;" the coat should be fine and short, and the skin moderately thin and easily moved; the two latter points being sure indications of good blood and careful treatment: although, of course, in using the terms fine coat and thin skin, we shall be understood to be speaking comparatively, as the expressions do not bear the same significance as when applied to the higher breeds.

Soundness, in the sense of freedom from constitutional disease, is absolutely indispensable to the production of a healthy progeny. Certain maladies and imperfections may exist in the parents without interfering with their fitness for stock animals; but, however slight the development of hereditary affections, they should always be regarded as disqualifications. Such diseases as cataract, ophthalmia, broken wind, and tendency to ossific deposits, ought to exclude an animal at once from consideration, although from their frequent occurrence among draught-horses such a course would materially lessen the number of breeding animals.

(*To be continued.*)

THE CROONIAN LECTURE ON THE COAGULATION OF THE BLOOD, DELIVERED BEFORE THE ROYAL SOCIETY, JULY 11, 1863.

By Joseph Lister, Esq., F.R.S., F.R.C.S.

(*Continued from p.* 687.)

It has been long known that if the blood be stirred with a rod, the process of coagulation is promoted. It seemed desirable to ascertain distinctly whether the cause of this was the contact of the foreign solid, or the opportunity given for the escape of ammonia; for it is quite true that in the ordinary process of stirring blood, more or less air is mixed with it. For the purpose of determining this I devised a somewhat complicated experiment, which, however, it may be worth while to mention. I made an apparatus of two portions of glass tube, connected in a vertical position by means of vulcanized india-rubber, the lower portion of the

glass tube being also connected by india-rubber, with a wooden handle, which handle was provided with an upright piece of wire, from which spokes projected in different directions, so that they would, when moved, act as a churn on any blood contained in the lower portion of tube. When the lower piece of tube was fixed by means of a vice, the flexibility of the india-rubber permitted the churn to be rotated so as to expose the blood to its influence. This having been arranged, I first poured in strong liquor ammoniæ, so as to get rid of any slight acidity which the constituents of the apparatus might be conceived to possess; and then, having poured out the ammonia, filled up the apparatus with water, and boiled the whole in a large glass test-tube till all bubbles of air in any portion of it were expelled. Having then tied into a branch of the carotid artery of a calf a bent tube of small diameter, and having permitted the blood to flow till it escaped at the orifice of the tube, I compressed the artery and passed the tube down through the water to the bottom of the apparatus, and then let the blood flow again, which had the effect of displacing all the water; and when the blood appeared at the top of the apparatus the tube was withdrawn, when two effectual clamps were placed on the vulcanized india-rubber; the india-rubber was then divided between the clamps. The upper portion of the apparatus, the orifice of which was exposed to the air, was set aside and left undisturbed. Having ascertained that the lower portion had been effectually sealed by the clamp, and thus prevented from any opportunity of escape of ammonia, I subjected it to the action of the churn for a certain number of minutes. It so happened that the blood of that calf was very slow in coagulating. I knew this from previous experiments on the animal, and therefore continued the action of the churn for a considerable time—namely, thirty-seven minutes. I then found the wire enveloped in a mass of clot; and examination of the fluid residue with a needle indicated that the fibrin had been all withdrawn from the blood on which the churn had acted. I did not now examine the other portion of the apparatus which had been set aside; but at the end of an hour and a quarter, when more than double the time had elapsed, I investigated this, and found the blood in it for the most part still fluid and coagulable. Thus the blood in the churn, which from the time it left the artery had no opportunity of parting with its ammonia, coagulated much more rapidly than that in an open vessel. The difference between the two was that the lower portion of the blood had been freely exposed to the influence of the foreign solid, whereas

the other had only been subjected to the action of the wall of the tube.

The same principle may be illustrated by an exceedingly simple experiment, which I performed only this very day. Receiving blood from the throat of a bullock into two similar wide-mouthed bottles, I immediately stirred one of them with a clean ivory rod for ten seconds very gently, so as to avoid the introduction of any air, and then left both undisturbed. At the end of a certain number of minutes, I found that, while the blood which had not been disturbed could be poured out as a fluid, with the exception of a thin layer of clot on the surface and an incrustation on the interior of the vessel, the blood in the other vessel, which had been stirred for so brief a period, was already a solid mass.

I have only lately been aware of the great influence exerted upon the blood by exposure for a very short time to a foreign solid, and I feel that many of my own experiments, and many performed by others, have been vitiated for want of this knowledge. Take, for example, the effect of a vacuum, which was observed by Sir Charles Scudamore to promote coagulation. This has been considered by Dr. Richardson as an illustration of his theory, the vacuum being supposed to act by favoring the escape of ammonia. I have lately inquired into this subject, and I feel no doubt whatever that the greater rapidity of coagulation in a vacuum depends simply on the greater disturbance of the fluid. I made the following experiment:—I filled three bottles such as these from the throat of a bullock, placed one of them under the small bell jar of an air-pump in good order, and exhausted it, leaving the other two undisturbed. The blood happened to be slow in coagulating; and at the end of about forty minutes, in the vessels where the blood had been undisturbed, there was only a slight film of coagulum on the surface, whereas the blood under the vacuum was found on examination to have a very thick crust of clot upon it. But during the process of exhaustion the blood had bubbled very much. Indeed, any exhaustion of blood recently drawn which is sufficient to cause the evolution of its gases induces great bubbling, so that the pump cannot be used freely for fear of the froth overflowing. To this disturbance, involving the exposure of successive portions of blood in the bubbles to the sides of the vessels, I was inclined to attribute the more rapid coagulation; but in order to prove the point I stirred for a few seconds the blood in one of these vessels hitherto undisturbed. After eight minutes I emptied the three vessels. I found that the blood which had not been disturbed at all, either by the vacuum or by the rod, was still almost entirely fluid, only

showing a thin crust upon the glass and on the surface exposed to the air. The blood which had been subjected to the vacuum had a thick crust of clot on the surface, and the sides of the glass were also thickly encrusted, but it still contained a considerable quantity of fluid that could be poured out from its interior. But that blood which had been stirred for only a few seconds was a solid mass throughout. In other words, gentle stirring of the blood for a few seconds had much greater effect in producing coagulation than the protracted and efficient exhaustion which was continued for upwards of forty minutes, which was a considerable time after all evolution of gas, as indicated by bubbles, had ceased.

Other experiments precisely similar in their effect were performed. I therefore feel no hesitation in stating that the effects of a vacuum, regarding which, indeed, the statements of different experimenters have hitherto been conflicting, afford no evidence in favour of the ammonia theory.

There is another point of very great interest in the history of the coagulation of the blood, which has been supposed to give support to the ammonia theory; and that is, the effect of temperature. It has been long known that blood coagulates more rapidly at a high than at a low temperature, and, indeed, a little above the freezing-point remains entirely fluid. This seemed beautifully in harmony with the ammonia theory, as heat would naturally promote, and cold retard, the evolution of the alkali, and a depression of temperature to near the freezing-point might be reasonably supposed to prevent its escape altogether. Indeed, Dr. Richardson mentions as a fact that ammonia artificially mixed with blood ceases to be given off under such circumstances.

Though thinking it not unlikely that this was the true explanation of the influence of temperature on coagulation, I thought it worth while to subject the matter to experiment. For that purpose I kept the blood of a horse fluid by means of a freezing-mixture, and afterwards by ice-cold water; and when the corpuscles had subsided from the upper part of the blood, I cautiously added to the liquor sanguinis extremely dilute ice-cold acetic acid till it was of distinctly acid reaction, the liquor sanguinis being of a colour that permitted the delicate application of test-paper, which is impossible with red blood. By this means any free ammonia which the fluid might have contained must have been neutralized; yet so long as it was kept in the cold it continued fluid, but when brought into a warm room it coagulated just as a specimen which had not been acidulated. Thus, when there could be no free ammonia in the liquor sanguinis at all, it was still affected as usual by temperature.

This experiment may not be satisfactory to all minds, though I confess it appears so to me; and as this is a point of very great interest, I have sought in another way for evidence regarding it. First, however, I will mention an experiment which will not at once appear to bear on the question of temperature. I drew out a fine glass tube in such a way as to produce a fusiform receptacle continued longitudinally each way into a tube of almost capillary fineness for about two inches, which again expanded at the end. Having squeezed out a drop of blood from my finger, I sucked up a portion into the tube till the receptacle and its capillary extensions were filled. I then broke off the expanded ends, and placed the little tube thus filled in a bath of the strongest liquor ammoniæ. Here certainly the blood was in circumstances in which it could not lose ammonia, but where any change in its amount must be by way of increase, and yet I found, on opening the receptacle by snapping it across after a scratch with a file, that instead of remaining longer fluid than in a watch-glass, the blood in it, being more in contact with the glass, was always more quickly coagulated, while coagulation was still more rapid in the capillary tube, where the blood was still more exposed to the influence of the foreign solid—the greater proximity to the liquor ammoniæ having no influence upon it.

(*To be continued.*)

Translations and Reviews of Continental Veterinary Journals.

By W. Ernes, M.R.C.V.S., London.

Clinique Vétérinaire, January, 1863.

ORIGIN OF COW-POX.

(*Continued from p.* 705.)

I cannot dissimulate that this appears to me very extraordinary, when it has been well demonstrated at the present time that the sheep-pox, which, in appearance at least, has more analogy with the vaccine than the malady of Toulouse, as described by MM. Lafosse and Sarrans, does not become transformed into the vaccine when inoculated in the cows, and that, moreover, it does not possess the property of preserving man from the smallpox. We

must, nevertheless, bow before a fact, however extraordinary it may be, if it were unexceptionable. But every one said that it was to be regretted that not a greater number of inoculations had been made in the cow at Toulouse, and that none were made direct from the horse to the human subject. This would have been, in fact, the only means of completing the case, and rendering it unassailable. When M. Lafosse was so obliging as to accompany me to Rieumes, where the mare was, which had furnished the matter for the inoculation (this was at the beginning of June), we saw four mares which had been attacked by the prevailing epizootic. One amongst them had deep traces of the malady about the face, and another had them on the pastern; I collected some of the scabs which covered the cicatrices. These mares had been attacked after the one of M. Corail, where the disease broke out. On the 17th of April, I also collected some of the scabs on the pastern of the mare of M. Corail, and some thick purulent matter from a crack in the same part. M. Lafosse, who was so very obliging to me during my short stay at Toulouse, also gave me some of the scabs taken from the teats of the heifers which had been inoculated. All these scabs were certainly very old, some having been formed two months ago. Being pounded together and properly diluted, they were, with some of the matter collected from the mare of M. Corail, separately inoculated, on my return to Paris, into horses, cows, and children. The results, as you may have expected, were negative. But I did not attach much importance to these results, on account of the unfavorable circumstances under which the matter had been obtained. I have, nevertheless, thought it necessary to mention it here, as too much cannot be said, when the elements are to indicate that which constitute an important fact, to serve as the basis of an opinion on which there is a controversy. This is, unfortunately, what has not been done in the majority of the observations and experimentations which might have served to determine the origin of the vaccine. The descriptions which M. Lafosse and M. Sarrans have given of the malady of Rieumes will, I am convinced, suffice to distinguish it. I have only seen the vestiges of this malady on four horses, observed by M. Sarrans on such a great number, and I believe that I should know it again if it presented itself to my observation. I can even affirm that I have already met with it in two subjects which were attacked by it—a horse and a mare. The horse belonged to the administration of the omnibuses of Bordeaux, and was under the care of M. Dupont, a distinguished veterinary surgeon, who inoculated a heifer

on the teats with the matter; the results of which were, however, negative. The matter was taken from the heel, where there were evident traces of pustules. The pustulous eruption, which extended the whole length of the leg, had been preceded by febrile reaction. The mare belonged to the administration of the funeral conveyance of Paris. I did not see her until the malady had made some progress, and there existed then only some scabs in the heel, which were of a lenticular shape. A little moisture existed on their external surface. Other scabs of the same shape were also on the leg, but they were dry and covered the depilated surfaces of the skin. M. Depaul and M. Bouley have seen this mare. The small quantity of matter that could be collected, and the scabs duly diluted, were inoculated by M. Bouley into a cow, and by M. Depaul some children were also inoculated by the same matter, but without any affirmative results. My son, who attended this mare, only saw her the evening before my visit, consequently he recognised easily the malady from the description I had given him of the pustulous eruptive malady of Toulouse. The two horses in question soon recovered, the same as was the case with those at Toulouse. I do not produce these two cases to annihilate the one at Toulouse. The inoculations, on the other hand, were not made under the same conditions. M. Lafosse inoculated eight days after the invasion, which was at a less advanced period of the malady, and directly and immediately from the horse to the cow; while the matter collected from the last two horses had been first collected in a bottle and inoculated in the cow, and that only after a certain time. The eruptive pustulous malady of Toulouse does not appear to be of very rare occurrence; if it has not been hitherto described, it is probably on account of its little gravity; if it really were the variola of the horse, it would differ in this particular from the sheep-pox, and the smallpox in man, and would in this respect have a greater analogy with the vaccine, and would only possess an interest, viz., if it really had the virtue which M. Lafosse has thought he discovered in it. Admitting with M. Lafosse that the liquid secreted in the course of this malady produces the vaccine when inoculated in the teats of the heifers, can we say, according to the opinion of M. Depaul, that it is the variola of the horse transmitted to the cow, which then takes the name of vaccine, after being slightly modified in the forms, or would we say simply that a nameless pustulous malady of the horse, not yet classed, can provoke or create the vaccine, the same as has been said of the grease? I would certainly incline towards the opinion of M. Depaul.

The same as if it were admitted as complete and undeniable as the case communicated by M.M. Maunoury and Pichat, which is a case in which a man had been affected with vaccinal pustules after having been in contact with a horse affected with grease. It would be necessary to say that a tuberculous malady of the skin of the horse has the property of creating the vaccine. There would thus be two maladies of the horse, at least, which, being very different in themselves, would be capable of producing the vaccine, and as, in my opinion, and in the opinion of many others, the vaccine is also created by itself, or spontaneously, and without the assistance of variola, or grease, medical men will, therefore, have no lack of vaccinal matter for some time to come. I would, however, advise them not to put too much dependence on that which is to be derived from the variola or the grease of the horse. Nature is not in the habit of deviating manifestly from the rule which has been traced for her. It is telling you, gentlemen, that I still believe in the spontaneous vaccine in the cow only, and I will not admit of any other origin of this malady, until facts more conclusive than those which are known up to the present time, have demonstrated to me that the vaccine may be created at will, and under influences determined beforehand, and notably under the influence of the contact with, or the inoculation of the grease of, the horse, and of a pustulous disease described by MM. Lafosse and Sarraus; and as the grease is not very rare, and the malady of Rieumes must also be common, there is every reason to hope that some fresh observations will soon be made to resolve this interesting question which is at present the subject of discussion. But it will be indispensable that great care should be taken to avoid the negligence with which the authors of these facts published on the origin of vaccine have been reproached—negligence which has hitherto prevented formulating a definitive conclusion. The few words spoken by M. Renault at the last meeting, gave me an opportunity to relate what took place relative to the diagnosis of the malady of the mare from which the matter was taken by which M. Lafosse inoculated. From what I had read and seen, it was with the greatest astonishment that I learned from the medical journals that they had succeeded, at the Veterinary School of Toulouse, in producing the vaccine by the inoculation of the matter from the grease of the horse. I immediately resolved to go and assure myself, not whether the mare of M. Corail was affected with the grease—a fact which I could not doubt, from what had been announced in the letters from Toulouse, which had been published—but to see in what state the grease was which

had furnished the virus. I departed for Toulouse in the first days of June, 1860. I met there Dr. Pidoux and my colleague M. Dupaul, whom I made acquainted with the object of my journey. I was very kindly received at the School of Toulouse by M. Lafosse; he first conducted me to see the inoculated heifers, which were still in the infirmary of the school. I found the cicatrices of the punctures where they had been inoculated in a favourable state. The mare from which the virus had been taken was sent back to its proprietor, who resided about twelve leagues distant from Toulouse, near Rieumes. M. Lafosse was so kind as to accompany me to the latter place, where we found M. Sarraus, who went with us to M. Corail. Before starting, he showed us two mares which he said had had the same malady as that of the mare of M. Corail. There remained only a few scabs in the bend of the pastern, and some lenticular points depilated on the other parts of the leg. It had not been a question up to this time as to the diagnosis. It was at that moment I said, "But this is not the grease." M. Lafosse, M. Sarraus, and myself, all agreed in this. We went afterwards to M. Corail's. On our road, M. Sarraus showed us another mare which had also been attacked by the same malady. This mare showed manifest traces, not only on the legs, but on the side of the head and face, where numerous cicatrices existed. Finally, we arrived at M. Corail's, where the mare in question also presented some traces of the evil. The pastern was denuded of hair; there were also some scabs in the bend of this region, and there was a small crack, the bottom of which was somewhat moist. On some part of the leg there were small circular spots denuded of hair, or else the hair came off easily, carrying small thin scabs with it. Here arose again the question of the diagnosis, and we all three agreed that the mare of M. Corail had not been affected by the grease, but by an eruptive malady similar to that by which the other mares had been affected, which had been shown to us by M. Sarraus. The next day I paid a visit to M. Bousquet, who was at his country house near Toulouse. I told him what I had seen the day before, and what I thought of the malady of the mare of M. Corail. I spoke to M. Prince, the director of the School of Toulouse, and to MM. Gourdon and Serres, chiefs of the Service. On repassing through Bordeaux, I announced to M. Dupont that the case of Toulouse, which had already caused much noise, was not a case of grease which had communicated the vaccine. On my return to Paris, I communicated to all who cared, and notably to M. Dupaul and all my fellow members of the academy, all that I had said at Toulouse and Bordeaux.

It was only on the 28th of June that M. Renault, after having announced the case of Toulouse by communicating a letter he had received from M. Lafosse, in which it was still the question of the grease, made the remark that the mare of M. Corail was not affected with the grease. M. Renault had not seen this mare. These are the true and simple facts of what took place as to the determination of the diagnosis of the malady of the mare of M. Corail.

M. Bouley demanded permission to resume, in a few words, the discussion. It results from these discussions, he said, this incontestable fact, that it is the horse which is the source of the vaccine,* but what is the malady which gives rise to the vaccine? This is what is yet completely ignored, and which remains to be determined by future experiments. We repeat the proposition, or rather the wish, that the school at Alfort may be entrusted with these experiments.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL, HELD NOV. 11, 1863.

PRESENT:—The President, Professors Spooner and Varnell, Messrs. Braby, Gardiner, Harpley, Harrison, Hunt, Jex, Lawson, Moon, Pritchard, Silvester, Robinson, Wilkinson, and the Secretary.

The PRESIDENT in the Chair.

The minutes of the preceding meeting were read and confirmed.

The *Secretary* read a letter received from Mr. Quain, tendering his resignation as a member of the Board of Examiners.

It was moved by *Mr. Jex*, and seconded by *Mr. Silvester*—

"That Mr. Quain's resignation be accepted."—Carried.

A letter was likewise read from Mr. Field, also tendering his resignation as one of the Examiners.

It was moved by *Mr. Lawson*, and seconded by *Mr. Harrison*—

"That Mr. Field's resignation be accepted."—Carried.

It was moved by *Professor Varnell*, and seconded by *Mr. Pritchard*—

* From what I have just stated, nothing is further from it.—U. L.

"That Mr. Ellis, of the University College Hospital, being a fitting person to fill up the vacancy occasioned by the resignation of Mr. Quain, it is desirable that his election be proceeded with."

It was moved as an amendment by *Mr. Wilkinson,* and seconded by *Mr. Silvester*—

"That the election of the Examiners be postponed, until the next meeting of the Council."—Carried.

It was moved by *Mr. Pritchard,* and seconded by *Mr. Braby*—

"That a vote of thanks be given to Mr. Quain for his valuable and long-continued services, as a Member of the Board of Examiners, and that an expression of the regret of the Council at his resignation be also conveyed to him."—Carried.

It was also moved by *Mr. Lawson,* and seconded by *Mr. Silvester*—

"That a similar vote of thanks be given to Mr. Field for his valuable services, as a Member of the Board of Examiners."—Carried.

The *Secretary* next read a letter received from Mr. Garrard, the legal adviser to the College, relative to the cost and expediency of bringing a Bill into Parliament during the next Session. After considerable discussion,

It was moved by *Mr. Wilkinson,* and seconded by *Mr. Pritchard*—

"That Mr. Garrard's letter, as now read, be entered on the minutes."—Carried.

A second letter was then read, and also the Report of the Committee, together with the Revised Bill.

In order that the Council might be furnished with all necessary information relative to the practicability of a Bill being brought into Parliament, it was deemed advisable, that Mr. Garrard should be present; whereupon that gentleman being introduced, gave his opinion relative to the bearings of the aforesaid Bill and the Charter of Incorporation, and also as to the expense which would be incurred. He feared that it might prove prejudicial to the interests and well-being of the profession if not passed; but in order to give greater satisfaction to the Council, if any doubt remained on the point, he, Mr. Garrard, begged to propose that the opinion o Counsel be obtained.

It was moved by *Mr. Harpley,* and seconded by *Mr. Lawson*—

"That Mr. Garrard be instructed to obtain the opinion of Counsel—selected by him—as to the probability of the Bill

being passed through the House, and that this opinion be laid before the Council at their next meeting."—Carried.

It was moved by *Mr. Wilkinson*, and seconded by *Mr. Jex*—

"That this meeting be adjourned *sine die* for the reception of the Counsel's opinion."—Carried.

Moved by *Mr. Wilkinson*, and seconded by *Mr. Robinson*—

"That the examination of candidates for the diploma of the Royal College, should take place during the Christmas week."—Carried.

By order of the Council,

WILLIAM HENRY COATES,

Secretary.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

RESOLUTIONS submitted and agreed to at a meeting of the West of Scotland Veterinary Medical Association, held in the Mechanics' Institute, Glasgow, on 21st October—Mr. Robinson, V.S., Greenock, in the Chair.

1. That the members of the Association participating in the interest excited in the public mind, by statements that have appeared of late in the public journals relating to the sale of diseased meat—that from the daily duties and professional avocations leading them to where disease in animals exists, and to a knowledge of the disposal of diseased stock, from the opportunities thus afforded, they flatter themselves that they are in a position to form an opinion on this question; they therefore have no hesitation in saying that the extent to which this traffic is carried on has been much exaggerated.

2. That this meeting views with repugnance the idea of the flesh of animals dying or slaughtered in the last stage of disease being used as human food. They cannot overlook the fact, that in rural districts, from time immemorial, it has been the practice to use as food animals that may have died suddenly or from accident when such animals were in good condition, and the carcases properly prepared, and of animals slaughtered in the incipient stage of disease; and they consider that when such an enlightened and scientific body as the medical profession (the close and rigid investigators into the cause of disease) have never attributed the consumption of such meat as being the cause of any disease, they

conclude that no bad effects have arisen therefrom; and although this meeting does not identify itself with the indiscriminate consumption of such meat, it considers that it would be impolitic to consign all to destruction.

3. That this meeting is satisfied that strict supervision is already exercised over our flesh markets and slaughter-houses, and that although some unprincipled individuals may evade the rules and regulations, this is the exception, and they would respectfully submit to the authorities the necessity of strict vigilance on the part of the officials in that department.

4. That with regard to the public sale of milk, the produce of the cow when labouring under disease—it is a well-known fact, that when animals are under the influence of disease, there is almost an entire cessation of the secretion of milk, so that the quantity of milk sent to market under such circumstances must be very limited.

Alex. Pottie, *Secretary.*

Veterinary Jurisprudence.

DEVIZES COUNTY COURT.

Before C. F. D. Caillard, Esq., Judge.

BREACH OF WARRANTY OF A HORSE.

George Benjamin *v.* George Holmes.

Mr. Bartrum, of Bath, appeared for the plaintiff; and Mr. Rowland, of Hungerford, for the defendant.

This was an action brought by the plaintiff, a coal merchant carrying on an extensive business at Bath, against the defendant, a farmer living at Wootton Rivers, in this county, to recover £25 0s. 6d., for the breach of a warranty of a horse.

Mr. Bartrum, in stating the case to the jury, said the plaintiff complained that at Tan-hill fair he bought a horse of the defendant's wife for £30, to which he received one of the most satisfactory warranties that it was possible to receive. The horse was warranted sound and a good worker, and the animal was taken home with the greatest care and circumspection, for in order to satisfy himself that there should be no blame attached to the driver, the plaintiff went himself with the animal to Bath. To Mr. Benjamin's surprise, on the horse being taken out of the stable next morning, it was found to be very lame. Mr. Benjamin at once had his horse consigned to the care of a most respectable veterinary surgeon —Mr. Broad, of Bath—and from what passed between them, a letter was written to Mr. George Holmes, the defendant. [The letter, which was read, was to the effect that finding the horse to be lame, the plaintiff had that day had him examined by a veterinary surgeon, whose certificate he had enclosed. The certificate stated that Mr. Broad had that day ex-

amined a bay gelding belonging to Mr. Benjamin, and he found it was lame on the fore-foot. This Mr. Broad attributed to its very flat and weak fore-feet.] This letter had been written the very morning after the horse had been purchased at Tan-hill fair. In reply Mr. Holmes wrote a letter. [This was read: It was in substance that the defendant was greatly surprised to learn that the horse was lame. There had never been the least fault to be found with the animal; he had always been perfectly safe and free from vice, and the defendant did not consider himself responsible for any accident which might have taken place since. The animal was well known in the village to be an excellent horse, and without any fault, and the formation of his feet could be seen at the time he was bought.] Mr. Broad was of opinion that the fault was a permanent one—the heels touching the ground, so that the frog, the part which ought to be protected from pressure, was not so protected, but actually pressed on the ground. This must have been known to the defendant, because the shoe was an irregularly-formed one. This, however, would not appear at Tan-hill, because the plaintiff had then no opportunity of trying the horse on the high road. The horse might have gone on very well indeed on a farm; but when he came to be driven on the road, he turned lame. It might be that the jury would have called before them veterinary surgeons on behalf of the defendant, but "the proof of the pudding was in the eating," and here was a demonstration that the horse was unsound, for a certificate from Mr. Broad was sent which stated that the horse was unsound. After being kept for some time, the horse was put up by public auction, Mr. Holmes having every opportunity given him for attending the sale, notice having been given and a handbill also being sent to him. The horse was sold in the Bath market, and it went into the hands of a perfect stranger, fetching £7. A number of persons were present at the sale; and the witnesses would tell them that the horse was irretrievably lame. He thought the jury would come to the conclusion that everything with regard to plaintiff's conduct had been done regularly, and had the defendant been disposed to do what was just and fair, the action would not have been brought, for all the plaintiff wanted was that the animal should be taken back, and his money returned. Everything had been done with a view to settle the matter; but as the defendant refused to do that, he was responsible for being summoned before the jury.

The Plaintiff was then called, and on being sworn, said: I am a coal merchant at Bath, carrying on an extensive business, in succession to my father. I was at Tan-hill fair on the 6th of August. I bought a bay gelding of the defendant's wife. I had no opportunity of trying the horse on the road, the fair being held on the turf. The horse appeared sound when purchased. The defendant's wife said it was five years old. I paid a cheque for £30 for the horse, for which I had a receipt. I saw the horse taken home. I rode a slight distance behind the horse, and it came home very quietly and coolly in about three hours. It was dark at the time, so that I could not say whether it was lame. I saw the horse the next morning about six o'clock. On the near fore-foot it went very lame indeed, when it was brought out of the stable for water. In consequence of that I sent for Mr. Broad, the veterinary surgeon, who came to me, and in consequence of a communication from Mr. Broad, I wrote to the defendant. [The letter, together with the certificate, were put in and read. The reply of the defendant was also read.] I kept the horse at my establishment for two or three days, for which no charge is made in the bill. As soon as I received the defendant's reply, I sent it to Mr. Broad's establishment. The horse was ultimately sold by auction in

the Bath cattle market, on the 15th of August, Mr. Henry Howell being the auctioneer. On the 10th of August I wrote a letter to the defendant, informing him that the horse would be submitted to public auction, and that the horse was older than his wife alleged. I subsequently sent a handbill to the defendant. I received an account from Mr. Howell, stating that the horse was sold for £7. My business is principally in Bath, and it is of course necessary that I should have a sound animal. I don't know where the horse is, or who purchased it, and I had no hand whatever in re-purchasing the horse.

Mr. Rowland (in cross-examination).—I conclude you have a good many horses. Without being very impertinent, may I ask what is your stock of horses?

Plaintiff.—About ten or eleven.

Mr. Rowland.—Where do you generally buy them?

Plaintiff.—Generally at home.

Mr. Rowland.—Had you bought any at Tan-hill before?

Plaintiff.—I bought some at Tan-hill the previous year.

Mr. Rowland.—How did they turn out?

Plaintiff.—One very well, and one did not.

Mr. Rowland.—Did you serve the one that did not turn out well the same as you have used this?

Plaintiff.—I returned it.

Mr. Rowland.—Then you went to Tan-hill with your eyes rather wider open than usual?

Plaintiff.—Not particularly.

Mr. Rowland.—Did you tell Mrs. Holmes that you had been taken in last year, and that this year you would prefer trying a horse out of a farmer's team?

Plaintiff.—I have no recollection of anything of the kind.

Mr. Rowland.—Words to that effect?

Plaintiff.—No.

Mr. Rowland.—Very well. If your memory don't serve you, I won't press it. If you returned the horse last year, why did not you return this?

Plaintiff.—I did return this one in the way I did the one last year.

The plaintiff was somewhat closely pressed in reference to this point, but he said: The horse last year actually went back. I am rather more than twenty miles from Tan-hill. Perhaps I am six miles from Tan-hill now. I should think it is twenty-five miles from Tan-hill to Bath. The horse was trotted at Tan-hill. The animal jerked out of my friend's hands, who held it. I considered the horse to be sound on the faith of the warranty given me. I bought three horses at Tan-hill that day. A drover rode one, and led the other. He rode this horse which is now in dispute; the former answer was an error of mine.

Charles Book, a haulier, living in Bath, who had been seventeen years engaged in that trade, said he saw a bay-gelding to be sold by Mr. Howell, in August last. There was only one horse sold on the 15th of August. The horse was very lame in the near fore-foot when sold. Witness had intended to purchase him, but he was so lame, that he did not. There were a great many persons there. It was ultimately bought by a cattle dealer for £7.

The witness was not cross-examined.

William Tanner, a horse-breaker, at Bath, where he had been ten years, said he took a bay gelding from Mr. Broad's yard to the market, on the 15th of August, and he saw him sold. The animal was very lame on the near fore-foot. He fetched £7. There was a "good parcel" of people there.

Mr. Bartrum.—Could you venture an opinion as to what produced the lameness?

Witness.—I looked at the heel, and the horse had very low heels, and he was shod according to it. I should think that was to keep the frog off the ground as much as possible. A horse that would work well on a farm would go lame when it came on the streets. I have known many such instances. If his feet would have stood, this would have proved a serviceable horse about the Bath streets.

Mr. Rowland.—Don't you suppose there are hard roads about a farm?

Witness.—By no means. By going on the road one day, and the farm another, he might not "show lame." I am not in Mr. Benjamin's employ. I got half-a-crown for taking the horse down.

Mr. Rowland.—Oh, I don't see 2s. 6d. down in the account.

Mr. Bartrum.—Then that's 2s. 6d. more for Mr. Benjamin (laughter). We ought to have increased the damages by 2s. 6d. (laughter).

Mr. Thomas Broad, veterinary surgeon at Bath, where he has been in practice some years, was then called, and he said: I remember a horse being brought to me from Mr. Benjamin to be examined, and I am the author of the certificate put in to-day. The horse had naturally badly formed feet—weak, low heels, with very little crust, and he was quite lame in the near fore-foot.

Mr. Bartrum.—Should you say that the lameness was irremediable?

Witness.—Yes. The horse was not able to bear road-work, but the immediate cause was the thick shoes to keep the frog off the ground, and they caused a greater amount of pressure on the heels, which were weak.

Mr. Bartrum.—Is it your opinion that the horse was sound?

Witness.—In my judgment the horse was certainly not a sound horse. Even shod with leather he was not a situable horse for road work—the feet were not fit for road work at all.

His Honour.—That was from their natural formation?

Witness.—It was. If that horse had been worked on soft land, it might not have gone lame, although it might have occasionally worked on the road. A journey of twenty-five miles on the hard road would have an effect on the horse. With such feet as that it might not necessarily produce lameness; but if repeated for three or four days I should expect to find it. I kept the horse for several days. The horse was off six and rising seven. I believe that opinion to be correct.

Cross-examined.—I saw the lameness as soon as the horse came. A cart-horse ought not to be put off a walk; he ought not to go more than five or six miles an hour. The shoes were taken off both feet, and I examined the feet thoroughly. I think such a journey from Tan-hill to Bath as I have heard described, might have caused lameness. In re-examination witness said he should not call such a horse a serviceable horse.

Mr. Henry Hussey, veterinary surgeon, of Devizes, said a horse with low weak heels would not answer the description of a sound horse. Horses with low heels can at no time stand the road; they may not go lame the first, second, or third journey, but they are sure to ultimately. A journey from Tan-hill to Bath might produce the lameness; but the disease of the horn must be of long standing, and might take a long time before it would show.

Mr. Bartrum proposed to recall the plaintiff, in order that he might be asked a question with reference to the time of the journey; but

Mr. Rowland strongly objected to this, and urged that his learned friend saw where the shoe pinched, and therefore he wanted to alter it.

Mr. Bartrum.—I think the horse-shoe pinched (laughter). I thought

my friend wanted to try the case on its merits, and now he is trying to burk it (laughter).

Mr. Rowland said he was not going to burk the case, as his friend would see presently; but he was not going to allow his friend to recall the plaintiff without taking the strongest objection to it.

This was the case for the plaintiff, and in addressing the jury for the defendant, Mr. Rowland explained how it was that a lady was in the position of a horse-dealer at this fair, a circumstance most unusual. Mr. Holmes, of Wootton Rivers, was a man known by reputation not only to him (Mr. Rowland), but to the greater portion of the county of Wilts, and a more respectable man as an agriculturist he (Mr. Rowland) ventured to assert did not exist.

His Honour interfered, by observing that they were not trying a question of character. The question before the jury was simply that of soundness or unsoundness.

Mr. Rowland apprehended that there was a question of character, because if he charged the defendant with giving a false certificate——

His Honour.—Pardon me. The giving of a warranty, and the horse afterwards going lame, may be consistent with the most complete honesty on the part of the woman. Nothing, I understand, is alleged against the character of the defendant.

Mr. Rowland said the witnesses had to some extent coloured their case, and he thought he had a right to comment on it.

His Honour.—If we get into the question of character, we lose sight of the real question at issue.

Mr. Rowland.—Very well, your Honour. If it is to turn on a question of soundness or unsoundness, I am content to let it stay there. If I am stopped——

His Honour.—I don't stop you in anything, unless it appears to me irrelevant. No imputation has been cast on the character of the defendant, and therefore any remarks that you may make have no connection with the question at issue.

Mr. Rowland said he must bow to the decision of the Court, and he then continued his address to the jury by observing that in the business of Mr. Holmes the horse was worked from the day he was bought to the time he was sold. He had not been put into a stall to be made to look well; but he was taken out of the stable on the morning of the fair, and taken to Tan-hill. He had been worked in all manner of ways, and at anything at which he was wanted to be worked. Mrs. Holmes sold the horse to the plaintiff, giving him a written warranty, the piece of paper containing a receipt as well as a warranty. He did not wish to make any objection to that, although it was open to this remark, that it was not in the handwriting of Mrs. Holmes, but was brought by Mr. Benjamin to the fair, Mrs. Holmes simply signing her name to it; but as the signature had been given, of course his client was responsible for it, and he was content that it should be so. A general and broad warranty had been given that the horse was a good worker; but if they put him to any work to which he was not accustomed, it was at the plaintiff's own risk. But was it the working on the Bath stones that ruined this horse? Nothing of the sort, for he never went on the Bath stones. The jury had seen where the shoe pinched a little, and they had also seen where Mr. Bartrum tried to mend it. Was twenty-five miles in three hours a pace for a cart-horse to go? It was a downright insult to common sense to ask them to believe it; and Mr. Benjamin saw that he had a little bit over-worked the horse—he saw that the animal broke down between Tan-hill and Bath. It was in that journey the horse was lamed, and

common experience told them that a horse might go out right and come in lame; but would they send that horse to a veterinary surgeon, and sell him as an unsound horse, or would they not see whether it was a temporary injury or a permanent one? He believed, however, that that was not the way they did business in the West of England, for he remembered a case somewhat similar to this at Marlborough. All he (Mr. Rowland) asked the jury to believe was that this horse was sold in the *bonâ fide* belief that he was sound, and his witnesses would prove that fact——

His Honour.—Surely you don't mean to argue that although under those circumstances the horse was unsound, the warranty would not avail? These remarks might be very important on the question of character; but they are wholly unimportant on a question of law. What has the defendant's belief to do with the present case? He may have believed that the horse was sound, but that won't avail. You gave a warranty, believing the horse to be sound; the horse turned out unsound, and your warranty makes you responsible.

Mr. Rowland.—I submit that we are not responsible beyond the question of our warranty.

His Honour.—Certainly not.

Mr. Rowland.—Then we have not given a warranty beyond what we are prepared to prove.

His Honour.—Do you mean to say that if you believe a horse to be sound, and with that belief you give a warranty of the soundness, and yet though it turn out that it was unsound, that you are not liable?

Mr. Rowland.—Yes, I do. I submit this was a limited warranty.

His Honour.—You may argue that the horse was sound, but that is quite another thing.

Mr. Rowland.—Then, your Honour, I have no case.

His Honour.—How can you say that? You don't distinguish between the two things. I have no doubt you have evidence that the horse was sound. You put it to the jury just now that the defendant believed his horse was sound, and although he gave a warranty, and the animal proved to be unsound, he was not liable.

Mr. Rowland said he was not prepared to argue the case on the broad footing just put by his Honour.

His Honour said he had never known Mr. Rowland wilfully to misstate anything; but the argument he had just propounded was an erroneous proposition of law which he could not allow to pass unnoticed.

Mr. Rowland said he had been twice stopped in his address to the jury, and he therefore preferred to let the case go on its own merits.

His Honour.—Don't be hasty.

Mr. Rowland, after some hesitation, said he would not proceed with his address, and he then called

Mrs. Jane Holmes, who said—I am the wife of Mr. George Holmes, of Wootton Rivers, who is an invalid. I remember going to Tan-hill fair this year with my son, and three or four horses. There was a bay cart-horse which I had had in my possession for three years. I sold it to the plaintiff for £30. During the time we had that horse he was never lame. He was frequently on the hard road. The horse was constantly working, up to the fair, and was not "made up" for sale. A few weeks before I refused £25 for the horse. I signed the warranty, having previously read it. I sold two horses, but I gave no warranty with the second.

His Honour.—What was done with the second horse has nothing to do with this case.

Mr. Bartrum.—Who bought the second horse?

Witness.—Mr. Jones.

Mr. Bartrum.—There are a good many Mr. Jones's (laughter).

Witness.—Mr. Jones of Marlborough. We had worked the horse for some time. I think we bought him when he was "two off." I forget what part of the year we bought him. I have used the horse for the usual farm purposes—he would go on the road, and also on the farm.

Mr. Bartrum.—Was not one of your horses given to shying out his fore-feet?

Witness.—I can't say, I never shod him (laughter).

Mr. Bartrum.—You know where the shoe pinches?

Witness.—We have a horse that throws out his fore-feet, and knocks off his shoes sometimes.

William Martin, carter for Mr. Holmes, at Wootton Rivers, said he took this bay horse to Tan-hill fair. During the two years witness was carter, the horse was put to any sort of work, plough, harrow, dung-cart, fore or behind, or any place where you liked to put him (laughter). He had never gone lame during the two years.

Cross-examined.—The horse has been put out to grass, night and morning. My master had five cart-horses, but we had not work enough for more than three. The pony sold was one of the horses rested. The horse sold to Mr. Benjamin had been worked every day for three months.

His Honour.—Had the horse been on the road?

Witness.—Yes, it had been for eight or ten days before it was sold. We never had a farrier to him all the time we had him (a laugh).

John Goddard, a labourer in the employ of the defendant, said he went with these horses to Tan-hill fair; Mr. Benjamin came up, asked the price of the horse, looked at the horse's mouth, and witness told him he was "five off." He told plaintiff if the horse had any faults he could see them. Witness had seen this horse for two years, and he knew he had been on the road and farm. He had never seen the animal lame. He had been working for Mr. Holmes, on and off, for three years, and from before last harvest constantly.

William Fidler, farrier at Wootton Rivers, said he knew this horse of Mr. Holmes's, and he had shod him since last Christmas. He had seen nothing particular about the formation of his feet. Some little time previous to the fair he did not "shoe him up" for the fair. He had often seen the horse before the fair, in a cart or wagon, and to his knowledge had never seen him lame.

In cross-examination the witness said he did not know how many times he had shod this horse in a year; he had not his book with him (a laugh). He knew that the horse had been several times on the road. He had shod about five horses of Mr. Holmes's.

Mr. Bartrum.—They were brought to you, I suppose, when they wanted shoeing?

Witness.—No, they were not, for we attended on them at the stable (laughter).

Mr. Bartrum.—How many geldings had Mr. Holmes got?

Witness.—I forget whether they are geldings or mares.

Mr. William Buckeridge, veterinary surgeon, of Hungerford, on being called, was shown Mr. Broad's certificate. He then stated that a horse with broad and flat fore-feet was not necessarily unsound. Horses with flat feet were generally as sound as horses with ordinary feet. They were generally sounder when they had been working on the roads. Witness had heard the journey from Tan-hill to Bath described by the witnesses.

Mr. Rowland.—Might a horse have been sound that morning, and have become permanently unsound from injuries received on that journey?

Witness.—He might.

His Honour.—This is important, and let me take it carefully. Do you mean to say, Mr. Buckeridge, that if the horse was taken twenty-five miles in three hours, it might receive permanent injury?

Witness.—I mean to say that a horse might receive an injury which would render him permanently unsound hy his stepping on a stone or kicking against some hard substance.

Mr. Bartrum (in cross-examination).—Should you, as a veterinary surgeon, recommend a customer of yours to purchase a horse with flat, feet?

Witness.—Recommend him?

Mr. Bartrum.—Would it be judicious to select a horse with flat feet?

Witness.—Certainly not.

Mr. Bartrum.—Don't you know it is the very thing to avoid?

Witness.—Yes, but it don't constitute disease.

Mr. Bartrum.—Is it judicious to purchase a horse with flat feet?

Witness.—I should not purchase a horse particularly with flat feet.

Mr. Bartrum.—Don't let us have conditions. Would you have purchased a horse at a fair price?

Witness.—Yes.

Mr. Bartram.—Would you recommend others to buy a horse with flat feet?

Witness.—No.

Mr. Bartrum.—Then there must be some good reason why you would not. What is it?

Witness.—In travelling a journey like this, it would be very liable to tread on a stone. These horses are more likely to be injured than other horses, but they are not so liable to chronic diseases as others.

Mr. Bartrum.—Are not flat-footed horses subject to a disease called laminitis (fever of the foot)? This will appear in a Veterinary Journal, so pray be careful.

Witness.—No, I don't know that they are.

Mr. Bartrum.—Now if a horse has low heels, is it not liable to become lame?

Witness.—It would want careful shoeing.

Mr. Bartrum.—I did not ask that. Is not a horse with low heels liable to become lame?

Witness.—Not if he were properly shod.

Mr. Bartrum.—You have heard the evidence of the witnesses; to what do you attribute the lameness of the animal?

Witness.—I did not see the horse before the sale.

Mr. Bartrum.—You have heard the evidence; what reason do you assign for the lameness?

Witness.—According to the blacksmith's evidence there was a good foot, and I should think it met with an accident. He might have struck his toe against a stone or some hard substance, and thus have produced inflammation in the covering of the bone or in the bone itself.

Mr. Bartrum.—Lameness might be produced in a single night by that?

Witness.—Oh yes; in a minute, or half-a-minute.

Mr. Bartrum.—Permanent lameness?

Witness.—Yes, after an accident. The horse might not be lame until he came to rest, or it might show itself at the time.

Mr. Bartrum.—Suppose the horse had trod on a stone, would that produce permanent lameness?

Witness.—It might or it might not.

Mr. Bartrum.—Then do you mean to say that a flat-footed horse is a sound horse?

Witness.—Yes.

Mr. Bartrum.—A horse with a flat foot without a crust—that is a sound horse?

Witness.—Yes.

Mr. Bartrum.—Is that a natural foot?

Witness.—Yes. You would find colts out at grass so.

Mr. Bartrum.—In a six-year-old horse would you find a sound horse possessing a flat foot with low heels and no crust?

Witness.—You might. If a horse was so when young, he would be so when he got six years of age.

Mr. Bartrum.—How long have you been in the profession?

Witness.—Nine years.

Mr. Bartrum.—Admitted nine years?

Witness.—Yes.

This being the case for the defendant,

Mr. Bartrum replied, commenting on the extraordinary hypothesis just propounded by Mr. Buckeridge, and remarking that if the human flesh were liable to all sorts of ills, he did not know what to say about the poor horse flesh, if it were so liable to be knocked up (laughter). He was sure the jury would place no reliance on such evidence. Mr. Bartrum then contrasted the evidence of Mr. Broad with that of Mr. Buckeridge, drawing attention to the fact that the former had seen the horse. This case would probably, through the medium of the press, get into the Veterinary Journal, and he expected they would find a good number of notes of admiration placed after Mr. Buckeridge's evidence. Mr. Bartrum urged in conclusion that the plaintiff was not seeking to gain anything by this action; but that he was simply endeavouring to recover what he was actually out of pocket.

His Honour summed up the case to the jury in a very lucid manner, drawing their attention to the fact that there had not been the slightest imputation cast on the character of either party. The defendant's wife had given her evidence in an extremely creditable manner, and had any imputation been made there would have been nothing to justify it. Neither had there been the least imputation on the part of the defendant. The learned gentleman who appeared for the defendant was quite incapable of making any misrepresentation either of law or fact, but he (the learned judge) thought he was mistaken so far if he thought that the belief of the defendant could in any way affect the warranty which had been given. Admitting that the defendant's wife fully believed at the time that the horse was sound, if a warranty were given to a plaintiff by a defendant or his agent, and the horse turned out to be unsound, clearly a plaintiff suing a defendant was entitled to damages. Of that there could not be the slightest doubt whatever, and this point he had been very anxious to clear up. The question for the jury to determine was, whether or not the horse was sound, and to give their verdict accordingly. One other observation he had to make to them was, that the burden of proof was on the plaintiff, and it was for him to satisfy them by reasonable evidence that the horse was unsound at the time of the sale. Then with respect to the damages, they might take the price given for the horse at the time by the plaintiff to the defendant, as fair and strong (though not conclusive) evidence of what the horse would be as sound, viz., £30. If the jury considered the sale by auction to have been fairly conducted under reasonable circumstances, then they might take the price given as a reasonable test of the value of the horse as unsound. They had then to take into consideration such expenses as might reasonably be incurred by the sale, which only amounted to a few shillings. About the minor

expenses there was no question. They had, however, to take into consideration the keep of the horse from the time the notice was given by the plaintiff to the defendant; and though they were not bound to give 18s., they ought to give what was fair for the keep of the horse during that time. He (the learned judge) did not understand whether or not the plaintiff sought to recover damages on the ground that the horse was not of the same age as stated.

Mr. Bartrum.—I am entitled to use a second string to my bow, but I don't think it will be needed.

His Honour, in addressing the jury on this subject, did not think there was much importance to be attached to this point, inasmuch as in the warranty the words were "a horse five years of age, warranted sound and good," so that he did not think the warranty applied to the age. There was a principle—applicable to the circumstances of this case,—one which had been laid down by the superior courts of law, and one which was very simple and satisfactory in principle, however difficult it might be in application. It was this—that any defect in the structure of a horse, whether congenital or arising from subsequent disease or accident, which diminishes his natural usefulness and renders him less than reasonably fitted for present use, is unsoundness. With these observations, His Honour carefully read over the principal portion of the evidence given, commenting thereon; and concluded by telling the jury that the question for them was—was the horse sound or unsound? If they came to the conclusion that the horse was not sound, then they ought to find a verdict for the plaintiff, assessing the damages on the principle he had pointed out to them.

The jury consulted for some time in the box, but they were unable to agree. The foreman (Mr. W. Hillier, of Devizes) enquired if the court would take the opinion of the majority of the jury?

His Honour.—Oh no.

The Registrar.—If you cannot agree, gentlemen, we have locks and keys at hand (laughter).

The Officer of the Court.—I'm waiting for them (renewed laughter).

The jury returned a verdict for the plaintiff, and were about to couple with their verdict an expression of their opinion that the plaintiff ought not to have driven the horse from Tan-hill to Bath in so short a time, when *His Honour* told them he could not take such a verdict. They had to do with nothing but the question—was the horse sound or unsound at the time of the sale? The jury had better reconsider their verdict.

After a few minutes' further consultation, the jury returned a verdict for the plaintiff for the full amount claimed.

MISCELLANEA.

THE LAND-LEECHES OF CEYLON.

Sir J. Emerson Tennent, in his account of Ceylon, recently published, states that of all animals and insects, venemous and otherwise, that infest that beautiful island, none are comparable as plagues with a species of leeches.

"The Ceylon land-leech is a thin, spare creature, about two inches long, and so nimble and flexible as to be able to insinuate itself up the legs and beneath the clothing as high as the throat. They do not crawl in the manner of our innocent medical leech, but plant themselves on one end, like a nail sticking out of the ground, and in that attitude watch for their prey. When disposed to move, they arch their body so as to bring the upper extremity to the earth, and advance on the two points by semicircular strides. Walking with amazing rapidity, they attack man and horse with equal audacity. Laying first hold of the foot, they ascend the dress in search of an aperture to reach the skin. In travelling through the jungle, hosts of them may be seen on the roadsides, waiting erect for their victims, and lurking in the grass. They make cattle their especial prey. It happens, says our author, 'that those persons in the rear of a party of travellers invariably fare worst, as the leeches, warned of their approach, congregate with singular celerity. Their size is so insignificant, and the wound they make is so skilfully punctured, that both are generally imperceptible, and the first intimation of their onslaught is the trickling of the blood, or a chill feeling of the leech when it begins to hang heavily on the skin from being distended by its repast. Horses are driven wild by them, and stamp the ground in fury to shake them from their fetlocks, to which they hang in bloody tassels. The bare legs of the palanquin-bearers and coolies are a favorite resort; their hands being too much engaged to be spared to pull them off, the leeches hang like bunches of grapes round their ankles; and I have seen the blood literally flowing over the edge of a European's shoe from their innumerable bites. In healthy constitutions, the wounds, if not irritated, generally heal, occasioning no other inconvenience than a slight inflammation and itching; but in those with a bad state of body, the punctures, if rubbed, are liable to degenerate into ulcers, which may lead to the loss of the limb or life.' The coffee-planters, we are told, wear 'leech-gaiters,' to protect themselves, as far as possible, from these cunning and bloodily disposed reptiles."

OBITUARY.

In the monthly Military obituary we perceive the name of John Surtees Stockley, Veterinary Surgeon, first class, half-pay Royal Artillery. Mr. Stockley obtained his diploma January 17, 1839, London.

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J. E. ADLARD, PRINTER, BARTHOLOMEW CLOSE.

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